DOCUMENT RESUME

ED 456 979 RC 023 179

AUTHOR	Robertson, Elizabeth B., Ed.; Sloboda, Zili, Ed.; Boyd, Gayle M., Ed.; Beatty, Lula, Ed.; Kozel, Nicholas J., Ed.
TITLE	Rural Substance Abuse: State of Knowledge and Issues. NIDA Research Monograph 168.
INSTITUTION	National Inst. on Drug Abuse (DHHS/PHS), Rockville, MD.
REPORT NO	NIH-97-4177
PUB DATE	1997-05-00
NOTE	552p.; For selected individual papers, see RC 023 179-191.
AVAILABLE FROM	GPO, Superintendent of Documents, U.S. Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15220-7954 ($83). Tel: 202-738-3238. For full text: http://www.nida.nih.gov/PDF/Monographs/Monograph168/Download168.html.
PUB TYPE	Books (010) -- Collected Works - General (020)
EDRS PRICE	MF02/PC23 Plus Postage.
DESCRIPTORS	Alcohol Abuse; At Risk Persons; Delivery Systems; Drug Abuse; Educational Needs; Health Behavior; Health Promotion; Illegal Drug Use; Intervention; *Minority Groups; *Prevention; Research Needs; Rural Areas; *Rural Population; *Rural Youth; Social Environment; *Substance Abuse; Youth Problems

ABSTRACT

This research monograph is based on papers from a technical review meeting of the same name, held April 26-27, 1994. It provides information about the special nature or context of rural communities that might impact patterns of drug and alcohol consumption and delivery of prevention and treatment services; health, social, and economic consequences of substance abuse; and special needs of rural subpopulations. Many papers include a focus on youth. The selected papers are: "Introduction: Drug and Alcohol Abuse in Rural America" (Zili Sloboda, Eric Rosenquist, Jan Howard); "The Social Context of Substance Abuse: A Developmental Perspective" (Rand D. Conger); "The Special Nature of Rural America" (Rand D. Conger); "Drug and Alcohol Use among Youth in Rural Communities" (Ruth W. Edwards); "Traffic and Illegal Production of Drugs in Rural America" (Patrick J. O'Dea, Barbara Murphy, Cecilia Balzer); "Risk and Protective Factors for Drug Use among Rural American Youth" (E. R. Oetting, R. W. Edwards, K. Kelly, F. Beauvais); "Introduction: [Health, Social, and Economic Consequences]" (Gayle M. Boyd); "Health Consequences of Alcohol Use in Rural America" (Gene H. Brody, Eileen Neubaum, Gayle M. Boyd, Mary Dufour); "Health Consequences of Rural Illicit Drug Use: Questions without Answers" (Dennis G. Fisher, Henry H. Cagle, Dawn C. Davis, Andrea M. Fenaughty, Theresa Kuhrt-Hunstiger, Susan R. Fison); "Social and Economic Consequences of Rural Alcohol Use" (Kelly J. Kelleher, James M. Robbins); "The Economic and Social Costs of Drug Abuse among the Rural Population" (Joseph F. Donnermeyer); "Introduction: Interventions and Services" (Elizabeth B. Robertson); "The Prevention of Alcohol Use by Rural Youth" (Carol N. D'Onofrio); "A Drug Abuse Prevention Strategy for Rural America" (Anthony Biglan, Terry Duncan, A. Blair Irvine, Dennis Ary, Keith Smolkowski, Lisa James); "In Living Context: An Interdisciplinary Approach to Rethinking Rural Prevention" (Gordon Karim); "Introduction to Mental Health Service Delivery in Rural Areas" (Elizabeth B. Robertson); "Mental Health Service Delivery in Rural Areas: Organizational and Clinical Issues" (Morton

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O. Wagenfeld, J. Dennis Murray, Dennis F. Mohatt, Jeanne C. DeBruyn); "Introduction: Drug Abuse among Rural Ethnic and Migrant Populations" (Lula A. Beatty); "Alcohol and Drug Abuse by Migrant Farmworkers: Past Research and Future Priorities" (James M. Watson); "Culturally Competent Substance Abuse Prevention Research among Rural Native American Communities" (Jerry Stubben); "Substance Abuse in Rural African-American Populations" (Marvin P. Dawkins, Mary M. Williams); and "Drug and Alcohol Use among Rural Mexican-Americans" (Felipe G. Castro, Sara Gutierres). (Each paper contains references.) (SV)

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National Institute on Drug Abuse

RESEARCH

MONOGRAPH SERIES

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Rural Substance Abuse: State of Knowledge and Issues

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Rural Substance Abuse: State of Knowledge and Issues

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NIDA Research Monograph 168
1997

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

National Institute on Drug Abuse
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ACKNOWLEDGMENT

This monograph is based on the papers from a technical review on "Rural Substance Abuse: State of Knowledge and Issues" held on April 26-27, 1994. The review meeting was sponsored by the National Institute on Drug Abuse.

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National Institute on Drug Abuse
NIH Publication No. 97-4177
Printed May 1997

NIDA Research Monographs are indexed in the *Index Medicus*. They are selectively included in the coverage of *American Statistics Index, BioSciences Information Service, Chemical Abstracts, Current Contents, Psychological Abstracts,* and *Psychopharmacology Abstracts.*

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Introduction: Drug and Alcohol Abuse in Rural America

Zili Sloboda, Eric Rosenquist, and Jan Howard

Farmlands, rolling hills, grazing cattle and sheep, blue skies, rosy-cheeked children, haystacks, and high-steepled churches all reflect the idyllic image of rural life held by most Americans. The reality is that rural life is a mosaic that includes the above image as well as closed factories, devastated communities, poverty, racial tensions, and starvation. Furthermore, the changing economy—more efficient farming procedures requiring less land, the closure of mines and other industries—has had a major impact on many rural areas in the United States. Poverty and the movement of young people to nearby cities have changed the demography of these areas and may have affected their vulnerability to social challenges, including drug and alcohol abuse.

Until the past few years the issue of drug abuse in rural communities held low priority. Residents of coastal cities of the United States, identified as the key entry points for drug smuggling and for marketing of drugs, along with many social problems, were viewed as being the most vulnerable to drug abuse and its associated consequences and sequelae. However, with new entrepreneurs taking over drug trafficking and with the wonders of chemistry to guide the formulation of designer drugs, literal inroads were made into the heartland of the United States so that today drug abuse has truly become an "American disease."

Alcohol-related problems are also endemic to the country as a whole, and alcohol is universally the substance of choice among youth and adults alike. Although Prohibition ended as a national policy in 1933, age 21 has been adopted by all 50 States as their legal minimum drinking age. Yet, other controls over the sale, distribution, marketing, and possession of alcohol vary greatly by region, State, and locality. Historically, drinking among Native Americans living on rural reservations has been a research focus. However, there has been a paucity of research on other facets of rural alcohol problems even though certain serious problems (such as motor vehicle deaths) occur more frequently in rural than urban areas.

With growing recognition that drug and alcohol abuse affect rural as well as urban populations, it became clear that very little information existed on the size and dimensions of these problems in rural communities. To initiate a research program designed to gain a better understanding of substance abuse in rural America, the National Institute on Drug Abuse, in collaboration with the United States Department of Agriculture and the National Institute on Alcohol Abuse and Alcoholism, coordinated a conference to assess substance abuse in rural communities. This conference, summarized in the following chapters, sought to review what is known about drug and alcohol abuse in rural settings, to identify gaps in this knowledge base, and to suggest areas for further study.

The conference and resulting monograph provide significant information about the special nature or context of rural communities, particularly relative to urban settings, that might impact patterns of alcohol and drug consumption and the delivery of services to prevent and treat alcohol and drug abuse. In addition, because of the differences in relevant laws, norms, and the physiological effects of drugs and alcohol, separate reviews and chapters were prepared for these substances. Unless otherwise specified, when the term "substance abuse" is used, it includes alcohol and other drugs. For the purposes of this monograph, the term "rural" has been defined in several ways: by distance from urban areas, by type of economic base, by density of population, and, in the case of Native American populations, by the geographic location of reservations. Rural has been defined also as a cultural perspective on the world as well as a normative structure. It is additionally defined by the distribution of scarce resources and services.

The epidemiologic data presented here, although sparse, show that rates of drug and alcohol use in rural areas vary, depending on the demographics of the area. They can be quite low or high relative to rates measured in the inner areas of large cities. More systematic measures of these rates and reasons for their variation should be the focus of further investigation. The mechanisms and processes that either place individuals and groups in rural settings at risk or protect them from abusing drugs and alcohol also require study. Researchers believe that declining economic opportunities among these groups are undermining family structures and dynamics, which previously served as protective factors against substance abuse. However, this hypothesis needs to be systematically tested in relevant communities.

The economic impact of the 1980s on rural areas in terms of lost jobs and migration to more urban areas has depleted available resources that supported the delivery of health, mental health, and drug and alcohol abuse prevention and treatment services. However, the specific nature of current service delivery systems, how they are organized, and who they reach are topics that have not been well documented. Opportunities for innovative delivery models may present themselves, particularly within community settings.

Furthermore, the special needs of certain population groups within the rural setting have not been well addressed. Native Americans, migrant workers, Hispanics, and African-Americans have been found to have differing patterns of drug and alcohol abuse and to be confronted with varying barriers to accessing services.

This foreword has only given the reader an overview of the problem and a general sense of the major issues that need to be addressed. The monograph is designed in sections, each introduced by a summary of the chapters included in the section. The first four chapters establish the parameters and characteristics of rural settings and the interpersonal social contexts that shape drug and alcohol abuse patterns and services. Topics covered include an overview of the epidemiology of substance abuse (including the extent and nature of drug and alcohol abuse); the social context in which these problems occur; the role that trafficking and illegal production play in influencing patterns of abuse; and the personal, family, social, and environmental factors that have been found to be associated with initiation of and progression in the use of drugs and alcohol.

The second section presents chapters on the health, social, and economic consequences of the abuse of drugs and alcohol. The third section focuses on prevention and treatment services, access and delivery issues, and information dissemination to improve these services. Finally, the fourth section presents the special needs of certain rural subpopulations, including migrants, Native Americans, rural African-Americans, and rural Hispanic-Americans.

The needs are clear for epidemiology/etiology and for prevention, treatment, and health services research. Examples of research areas to be addressed include:

- Epidemiologic descriptions of patterns of drug and alcohol abuse, of the characteristics of those who evidence these patterns, and of the social/economic/environmental context associated with incidence and prevalence patterns, with special attention to the impact of both in- and out-migration in rural areas.

- Documentation of health problems related to substance abuse (specifically human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), tuberculosis, and other sexually transmitted diseases (STDs)), as well as social-legal and economic consequences of drug and alcohol abuse with a focus on community-family factors that promote or protect against such consequences.

- Identification of the processes associated with initiating drug and alcohol use and progression to abuse/dependence, including periods of discontinuation. Special emphasis should be given to determining protective factors (processes) that prevent or interrupt progression.

- Specification of varying use and abuse patterns for different cultural, ethnic, gender, generational, and occupational subgroups within rural populations (e.g., farming, fishing, mining, lumbering, blue- and white-collar manufacturing, and service providers).

- Development and testing of innovative, multistrategy, comprehensive model prevention and/or treatment interventions that are community based.

- Development and testing of single-channel prevention strategies such as media, worksite, family-based, or school-based approaches.

- Evaluation of existing prevention/treatment services being delivered to rural populations, including studies of special subpopulations such as those living in economically depressed communities (e.g., Appalachia) and mobile communities such as migrant farmworkers.

- Assessments of the impact of prevention strategies and/or treatment services delivered at the community, State, regional, or national level, including the effects of specific laws or regulations such as controls on the availability of alcohol.

- Assessment of outreach strategies to expand prevention and/or treatment services to underserved populations in rural areas.

- Research on methods for diffusion of innovative clinical practices and management techniques to improve prevention/treatment services and lower program costs.

- Research on consumer choice, prevention/treatment program selection, and service retention associated with existing or innovative practices.

- Research to integrate drug and alcohol abuse prevention with interventions directed at other related behavioral and societal problems such as violence, teenage pregnancy, school dropouts, domestic abuse, and STDs.

- Prevention intervention research for preschool and elementary students with possible drug- and alcohol-induced learning disorders.

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The Social Context of Substance Abuse: A Developmental Perspective

Rand D. Conger

Contemporary American society struggles to find solutions to multiple problem behaviors involving crime, delinquency, violence, and substance abuse (Elliott et al. 1989; Hawkins et al. 1992; Reiss et al. 1993; Sampson and Laub 1993). Research evidence indicates that these phenomena are interrelated and that individuals demonstrating one behavioral disorder, such as substance abuse, are at increased risk for experiencing other adjustment difficulties (Jessor et al. 1991). Indeed, many researchers suggest that the initial causal mechanisms for a broad range of the most serious and chronic problems increases the probability of later crime, delinquency, and substance abuse (Elliott et al. 1989; Gottfredson and Hirschi 1990; Moffitt 1993; Sampson and Laub 1993). Moreover, individual pathways from early childhood behavioral problems to multifaceted syndromes of maladjustment take shape within a set of closely connected social contexts involving family, peers, school, and other community institutions.

Findings regarding the early precursors of substance use and related adjustment difficulties have led to interest in developmental models for the explanation of problem behavior. Theoretical frameworks for explaining the development of substance abuse and correlated antisocial acts seek to identify the social and dispositional mechanisms that account for the initiation, maintenance, and termination of problem behaviors across time (Conger and Simons 1995; Hawkins et al. 1992). The developmental approach to understanding substance use, which views social context as part of a dynamic process, has been especially important. Social factors, for example, are predicted to affect risk for substance use and abuse, but problems with substances also are hypothesized to influence possibilities for future social involvements that will, in turn, have an effect on later risk. Although there are exceptions, for the most part these dynamic processes appear to begin early in life and can be charted from childhood through adolescence to the adult years. The following discussion will focus on the years from childhood through adolescence because adult risk for conduct and substance problems largely emanates from acts and experiences during this period of life (Gottfredson and Hirschi 1990; Sampson and Laub 1993).

This chapter considers five major themes (to be elaborated later) that characterize the relationships among social context, individual dispositions, and syndromes of problem behaviors that include substance use and abuse (see also Conger and Simons 1995). The discussion first summarizes contemporary findings regarding risk mechanisms that typically involve reciprocal links between social contexts or processes and individual development. This review leads to the elaboration of a developmental model regarding social influences in substance abuse. The final section of the chapter considers the need for future research to evaluate the proposed conceptual framework.

Although the current volume focuses on rural substance use, the information in this chapter is general in its application to multiple behavior problems and social contexts. As will be considered more fully in subsequent chapters, the model developed here generalizes across contexts, but the values of the parameters in the model will often vary as a function of urban or rural setting. For example, the model considers community characteristics, such as the amount of substance use in the neighborhood, that affect risk for substance abuse. This risk factor will be equally influential in both urban and rural locations; however, the rates and types of community drug and alcohol use may vary systematically by geographic context, thus producing urban and rural differences in risk for specific types of substance abuse.

CONTEMPORARY THEMES IN EXPLAINING MULTIPLE PROBLEM BEHAVIORS

Substance abuse appears to be one dimension of an interrelated cluster of problem behaviors that includes delinquent and criminal activities (Jessor et al. 1991; Patterson et al. 1992). For that reason, the following theoretical and empirical themes apply both to substance abuse and to antisocial behavior in general. Especially important, the most basic premise (theme #1) in current understanding of this constellation of problem behaviors is that substance abuse is part of a developmental progression from relatively minor to more serious antisocial activities (Elliott et al. 1989; Loeber and LeBlanc 1990; Patterson 1993). In their longitudinal study of a national sample of children and adolescents, for example, Elliott and colleagues (1989, p. 189) found that "Minor delinquency comes first, followed by alcohol use, serious delinquency, and serious drug use." Findings such as these illustrate the contemporary view that, in most cases, substance abuse does not suddenly emerge as a serious problem during adolescence with little or no previous experimentation with other deviant activities. Indeed, the data suggest that problems with substances are exacerbated by and likely con-tribute to a variety of delinquent and criminal acts (Sampson and Laub 1993). This understanding—that crime, delinquency, and the misuse of substances likely result from interrelated developmental processes—suggests that general principles basic to the full range of human developmental phenomena may apply equally well to the explanation of these behaviors.

Placing substance abuse within a developmental progression of antisocial behaviors that begin with relatively minor deviant acts during childhood underscores the need for social-contextual models of substance abuse that include explanatory variables existing early in the life course (theme #2). Contemporary thought suggests that a comprehensive understanding of substance abuse and related problems requires the explanation of antisocial behaviors such as temper tantrums and noncompliance during early childhood, before the age when serious substance abuse or criminal acts are likely to occur (Gottfredson and Hirschi 1990; Hawkins et al. 1992; Moffitt 1993; Simons et al. 1994*a*). Current theory and empirical evidence suggest that syndromes of problem behaviors, including substance use, cannot be understood only in terms of causal influences occurring during adolescence or adulthood. Indeed, several theorists now postulate that the most powerful predictors of later chronic substance abuse and delinquency during the teenage years include noncriminal antisocial conduct during childhood (e.g., Moffitt 1993). From this perspective, an understanding of adolescent antisocial behavior requires an explanation of childhood misconduct that serves as a primary precursor to later serious delinquent offenses, including the abuse of substances (Moffitt 1993; Patterson 1993).

The realization that the early manifestations of problem behaviors likely become apparent before adolescence has placed new emphasis on the role of the family in explanations of antisocial tendencies (theme #3). Contemporary scholars representing diverse theoretical approaches now assign a central role to family processes in the early development of antisocial behavior and later substance abuse, delinquency, and criminal conduct (Akers 1994; Gottfredson and Hirschi 1990; Loeber and Stouthhamer-Loeber 1986; Patterson et al. 1992; Moffitt 1993; Thornberry 1987). Numerous studies have clearly demonstrated that parents increase the probability of having an antisocial child when they: (1) fail to adequately supervise their children, (2) do not provide appropriate discipline for misconduct, (3) treat their children in a neglecting or hostile fashion, and (4) fail to positively attend to or reinforce conventional activities or socially desirable behavior (Conger et al. 1992, 1993, 1994*a*; Hawkins et al. 1992; Simons et al. 1994*a*, 1994*b*). Particularly important, this renewed interest in family process brings with it a more sophisticated, contemporary view of family dynamics and deviant developmental trajectories.

The current perspective (theme #4) suggests that family interactions involve reciprocal influences in parent and child behaviors that affect both the probability of child misconduct and also disruptions in effective child-rearing practices (Conger and Rueter 1995; Lytton 1990; Thornberry et al. 1991; Vuchinich et al. 1992). Vuchinich and colleagues (1992), for example, demonstrated that antisocial behavior by 11- to 12-year-old boys had an adverse influence on effective disciplinary practices of parents, controlling for the same parent behaviors assessed 2 years earlier. Thus, these boys' misconduct, which included generally oppositional behavior (e.g., noncompliance with parent requests) as well as potentially delinquent acts (e.g., stealing), was related to reduced parenting competence across time. Effective disciplinary practices, on the other hand, were associated with relatively fewer (compared to other boys in the sample) antisocial behaviors at the second wave of assessment. Moreover, Conger and Rueter (1995) demonstrated that alcohol abuse by seventh graders predicted later harsh and inconsistent parenting that, in turn, increased risk for associating with peers who drink and later alcohol abuse by these teenagers. The parents and youths in these studies, then, apparently had reciprocal influences on one another's behavior, consistent with the contemporary view of bidirectional family effects (Thornberry 1987) but inconsistent with earlier models that postulated only an impact of parenting on deviance and delinquency (e.g., Hirschi 1969).

The theme just discussed emphasizes the importance of the family as a social institution that regulates, or fails to regulate, the development of child and adolescent substance abuse and related antisocial behavior across time. It has long been recognized, of course, that the family represents only one of several interrelated social contexts that affect the developmental trajectories of youth. An important advance in the field has been the recognition that reciprocal influences exist not only within the family but also between the behaviors of individual family members and the other social contexts important to the development or restraint of adolescent misconduct (theme #5). Related to the school environment, Thornberry and colleagues (1991) have shown reciprocal negative influences between deviant behavior and school commitment across time. Their results demonstrate not only that commitment to academic pursuits decreases involvement in delinquency but also that antisocial behavior decreases success in school.

Regarding peers, Melby and associates (1993) found that tobacco use by parents and siblings increased the likelihood that seventh graders would select friends who use tobacco, and Conger and Rueter (1995) showed these same influences for adolescent drinking problems. Association with deviant friends, of course, is usually the strongest correlate of both substance abuse and delinquent behavior in general (Elliott et al. 1989; Hawkins et al. 1992). These findings suggest that family influences affect the selection of peers who, in turn, are likely to exacerbate problem behaviors that will have an adverse impact on the family. In addition, Sampson and Groves (1989) have shown that community participation and involvement in extensive friendship networks by adults, presumably including parents, reduces adolescent misconduct at the community level. Thus, parents' roles in the community can affect the degree of exposure by their children to antisocial influences that, in turn, can increase the difficulty of successful childrearing (Richters and Martinez 1993).

The material just reviewed indicates that a useful theory of social-contextual influences on adolescent conduct problems, including the use or abuse of alcohol, tobacco, and other drugs, needs to address these five contemporary themes in the study of antisocial behavior: (1) the developmental nature of antisocial behavior, (2) its link to oppositional or aversive acts in early childhood, (3) its foundations in family relationships, (4) its role in bidirectional influences within the family, and (5) its reciprocal ties to the behaviors of family members and the responses of other social contexts (e.g., peers, school, and community) important to the developing child or adolescent. A social-contextual perspective also needs to address the demonstrated relation between adult antisocial behavior and earlier substance use and conduct problems. That is, a social-contextual approach necessarily takes a life-course perspective, which emphasizes the reciprocal interplay between individual behavior and social influences from early childhood to the adult years. The next section elaborates the basic elements of a social-contextual theoretical framework for substance abuse that is consistent with the themes just reviewed and with empirical findings.

A SOCIAL-CONTEXTUAL MODEL OF SUBSTANCE USE AND ABUSE

A fully elaborated model of social-contextual influences on substance use and abuse must address the five themes just discussed. As illustrated in figure 1, these themes begin with the assumption that the misuse of drugs and alcohol is developmental in nature, in many instances, starting with behavioral precursors present early in life and extending in some cases late into the adult years (life course stages in figure 1). Moreover, a comprehensive social-contextual framework must consider several domains of social influence, ranging from the family to the larger society in which families, schools, and communities are embedded. Finally, the reciprocal interplay among social contexts and individual developmental pathways should be studied at several different levels of analysis from biological and psychological mechanisms to comparative analyses of large population groups. In this brief review, only a limited number of the relevant research dimensions is considered; these are outlined in figure 1 by generating a social-contextual model of risk for substance use during childhood and adolescence. Because substance use initiation during this early time of life can have long-term negative consequences well into adulthood, it is a particularly fruitful area for theoretical development. The illustration of a social-contextual model can, of course, be elaborated to include other life-course stages, social contexts, and levels of analysis.

As previously noted, the early predictors of substance use (e.g., association with deviant peers and faulty childrearing practices) are equally associated with delinquent or antisocial behavior in general. Indeed, conduct and substance use problems are highly interrelated (Hawkins et al. 1992), and a social-contextual model for substance abuse largely overlaps with related frameworks for explaining a multifaceted range of conduct problems. Thus, the following discussion draws on both the substance abuse and delinquency literatures to generate a social-contextual model of problem behaviors. Interestingly, individual difference variables play an important role in this social-contextual perspective, consistent with the view that behavior and context are reciprocally interrelated. First considered are important individual characteristics involving biological processes, emotional response, and cognitive functioning, which are then placed within the more general model.

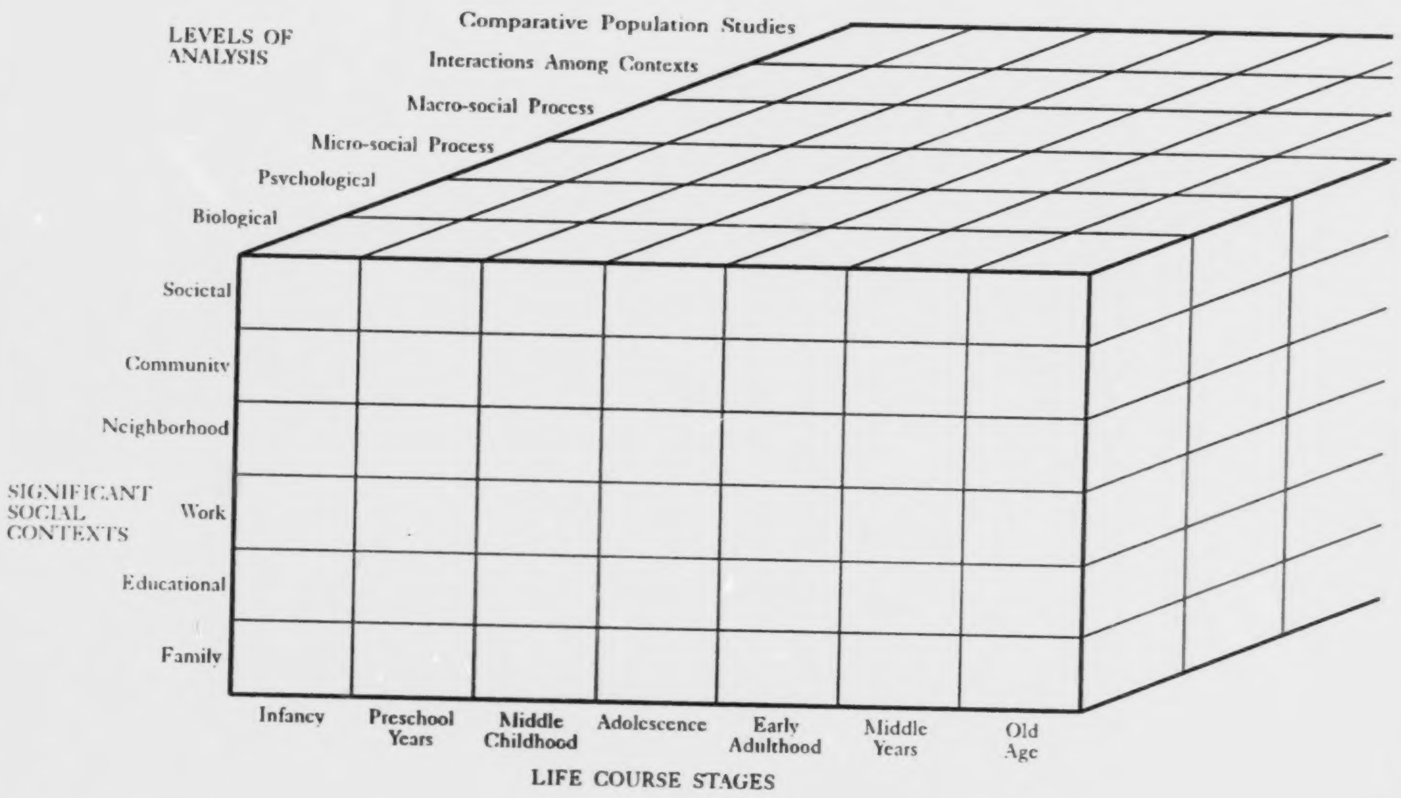
LEVELS OF ANALYSIS
Comparative Population Studies
Interactions Among Contexts
Macro-social Process
Micro-social Process
Psychological
Biological
Societal
Community
Neighborhood
SIGNIFICANT SOCIAL CONTEXTS
Work
Educational
Family
Infancy
Preschool Years
Middle Childhood
Adolescence
Early Adulthood
Middle Years
Old Age
LIFE COURSE STAGES

FIGURE 1. *Elements of a developmental model for social-contextual influences.*

Individual Characteristics in Social Context

The Role of Emotions. Research on social-contextual influences shows that humans and other animals demonstrate a range of negative emotional responses when positive outcomes in the social environment are lost or denied and when painful stimuli are experienced (Berkowitz 1989; Bolger et al. 1989; Conger et al. 1994*a*; Patterson et al. 1992). These emotional responses include antisocial behaviors such as aggression, anger, and irritability, as well as internalized symptoms such as depression and anxiety (Berkowitz 1989; Conger et al. 1994*a*; Simons et al. 1993). Moreover, negative moods such as depression also are associated with anger, irritability, and less socially competent behaviors, which again relates to a broad range of antisocial activities (Downey and Coyne 1990). These socially influenced emotions also predict involvement with alcohol and other drugs (Chassin et al. 1993; Sher et al. 1991), although the specific mechanisms for the association are not well understood (Hawkins et al. 1992; National Institute on Alcohol Abuse and Alcoholism (NIAAA) 1993).

It appears, then, that social-environmental contingencies have the capacity both to elicit as well as to shape or maintain problematic emotions or behaviors. The important point is that ongoing social constraints or contingencies may operate to exacerbate emotional characteristics that make an individual child or adolescent more vulnerable to substance abuse and other adjustment problems (Cairns 1991; Cairns and Cairns 1991; Hawkins et al. 1992). High levels of emotional distress may disrupt social interactional or academic skills, leaving the individual less capable of profiting from available reinforcement for conventional activities and increasing the salience of unconventional behaviors and environments. Thus, emotional dispositions are seen as an important corollary of environmental contingencies. These dispositions intensify an individual's tendency to behave in a hostile, aggressive, or irritable fashion. They also disrupt competent, socially desirable activities, and may lead directly to substance misuse as part of a negative reinforcement or stress-dampening process (NIAAA 1993). Although these emotional responses are affected by environmental events and conditions, they are also linked to basic biological processes.

The Role of Biological Processes. At the most basic level, biological processes are involved in the way children and adolescents learn, remember, think, behave, and make choices about future activities (White and Milner 1992). Consideration of these fundamental, biological substrates of human behavior are beyond the scope of this review, but they certainly have significance for human behavior in general and, thus, for problem behaviors as well. Most important for the elaboration of a social-contextual model of substance abuse is work that has been conducted in the areas of genetic influences and what Moffitt (1993) has termed neuropsychological risk.

Turning first to conduct problems in general, perhaps no theoretical perspective has been more vigorously debated than the view that criminal or delinquent behavior is an inherited disposition (e.g., Gottfredson and Hirschi 1990). Current evidence suggests that there may well be a genetic vulnerability to antisocial conduct, but this vulnerability accounts for only some of the variance in delinquency (Plomin et al. 1994). In fact, Plomin, a leading behavioral geneticist, argues that the study of behavioral genetics has bolstered the argument for the importance of environmental influences on behavior. More specifically, "The same data that point to significant genetic influence provide the best available evidence for the importance of nongenetic factors. Rarely do behavioral-genetic data yield heritability estimates that exceed 50 percent, which means that behavioral variability is due at least as much to environment as to heredity" (Plomin and Rende 1991, p. 179).

Interestingly enough, delinquent behavior, compared to other forms of developmental disorders, tends to show the least evidence of heritability and the greatest evidence of shared environmental influences for siblings living in the same family (Plomin et al. 1994). Current empirical findings suggest relatively strong environmental compared to genetic influences on delinquency, and these influences appear to operate similarly for children raised in the same social environment. The results regarding the heritability of delinquency, then, suggest important environmental influences, consistent with a social-contextual approach that predicts developmental trajectories from the social contingencies available to children and adolescents. It is assumed that genetic factors affect vulnerability to con-duct problems, but their possible influence does nothing to diminish the importance of understanding how different environmental circumstances intensify or dilute the expression of genetically related behavioral dispositions.

In addition to considering their genetic roots, Moffitt (1993) has carefully reviewed the research literature regarding the environmental correlates of biological structure and process, as well as the link between biology and developmental characteristics related to delinquency. Moffitt notes that several dimensions of social disadvantage, such as poverty and living in a high-crime-rate area, are also related to genetic and prenatal risks for biological insult. For example, parents living in the most disadvantaged circumstances are more likely to have an antisocial history themselves (see also Simons et al. 1993), suggesting possible genetic as well as social risks for child behavior problems. Children of such parents also are more likely to suffer poor nutrition and inadequate prenatal care, suggesting environmental risk for prenatal and postnatal biological development (Moffitt 1993).

Moffitt (1993) notes that a child with even minor biological anomalies, whether the result of genetic or environmental factors, appears to be at risk for poorer emotional regulation, behavioral control, and cognitive functioning. The picture that merges is one of biological influence on general competence for children who are thus less capable of acquiring appropriate social and academic skills. These deficits characterize youth at risk for delinquency, as has been noted in the general literature on crime and delinquency (Gottfredson and Hirschi 1990). It appears, then, that biology plays its strongest role in creating risk for delinquency by threatening the emotional, behavioral, and cognitive functioning of the individual child. A great deal of this biological risk appears to result from the same disadvantaged social environments that play a major role in a social-contextual perspective on delinquency.

Thus, in a fashion similar to difficulties in emotional functioning, genetically or environmentally induced biological deficits may reduce overall competence or exacerbate behavioral problems. These individual characteristics likely influence responsiveness to environmental contingencies related to reinforcement or punishment. For example, the academically less able will be less likely to be restrained from misconduct by the payoffs associated with academic performance (Conger 1976; Gottfredson and Hirschi 1990). The less competent child also may be more difficult to raise, thus decreasing the probability that a reciprocally reinforcing bond will develop between parent and child (Moffitt 1993). The important point is that biological deficits may affect the way in which an individual child or adolescent relates to multiple environmental contingencies, but they do not diminish the importance of those social influences.

But how does that evidence regarding biological influences on delinquent behavior relate to the explanation of substance abuse? First, the degree to which delinquency is heritable is quite consistent with estimates of heritability for substance use and abuse (Hawkins et al. 1992; Plomin et al. 1994), again underscoring the interrelatedness of the two phenomena. Second, several dimensions of delinquency, such as behavior undercontrol, poor emotional regulation, and impulsive risky behaviors, both predict and are predicted by substance use (Elliott et al. 1989; Hawkins et al. 1992; Sher et al. 1991). These findings suggest that many biological substrates that may increase risk for other conduct problems may also increase risk for substance abuse (Cadoret et al. 1995).

Finally, in an especially important program of adoption research on the combined influence of biology and social experience on antisocial behavior and substance abuse, Cadoret and colleagues (in press) have shown that: (1) a history of biological parent substance abuse and/or antisocial conduct predicts antisocial behavior and substance abuse by adoptees; (2) this genetic history is most likely to manifest itself in a disrupted adoptive home environment; and (3) prenatal exposure to alcohol has an independent influence on later adoptee conduct problems net of the effects of genetic history and adoptive home environment. In summary, the available data suggest that delinquency and substance abuse are similarly influenced by biological factors; the genetic component of a biological predisposition to substance abuse and related conduct problems appears to become manifest largely in disrupted social environments; and social-contextual variables (e.g., poverty) affect biological development, which, in turn, affects antisocial and substance use behaviors.

The Role of Cognition. Cognitive variables also play an important role in various approaches to understanding delinquent and substance use behaviors. Sociologists often assert that beliefs or definitions regarding conventional or antisocial behavior are important factors in fostering or restraining conduct problems (Akers 1994; Hirschi 1969). More work on models of information processing or self-regulation also propose a central role for cognitive processes in child and adolescent adjustment problems (Crick and Dodge 1994; Feldman and Weinberger 1994). For example, Feldman and Weinberger (1994) showed that a sense of self-restraint reduces the likelihood of later delinquency. Consistent with a social-contextual approach, however, they also found that a youth's sense of self was strongly predicted by the quality of family relationships. Similarly, Crick and Dodge (1994) suggest that cognitive processes that affect conduct problems may derive substantially from interactions with others. Research specifically focusing on drug and alcohol use has also shown that favorable attitudes or expectations regarding use increase risk and that these cognitions derive in large part from social-contextual factors (Hawkins et al. 1992; NIAAA 1993; Sher et al. 1991).

These findings are consistent with the thesis that cognitive processes (such as beliefs, values, expectations, and attributions regarding self and others) derive largely from social experience (see also Patterson et al. 1992). Although cognitions may play a mediating role between experience and action (e.g., Feldman and Weinberger 1994), it is expected that social contingencies play a major role in shaping cognitions as well as behavior. This is particularly apt to be the case during childhood and adolescence. There is rather strong evidence, for example, that aggressive boys tend to perceive other people as having hostile intentions (Crick and Dodge 1994). Although this is often labeled an information-processing bias, Patterson and associates (1992) note that the assumption of hostile intentions accurately reflects the interactional experiences, such as those occurring in their families, of the antisocial boys in their longitudinal studies. This finding suggests that the propensity of aggressive boys to perceive hostile intentions is more a reflection of their reality than a perceptual bias. Similarly, it is likely that children's perceptions of the positive or negative effects of tobacco, drugs, and alcohol are significantly related to their social experiences in the family, school, and community. When models for substance use are plentiful, when consumption is generally defined as acceptable and enjoyable, and when use is encouraged in proximal social settings, a child or adolescent will likely come to share these socially generated beliefs and practices, thus incurring increased risk for later substance use problems (Akers 1994; Conger and Rueter 1995; Hawkins et al. 1992). From this perspective, features of social contexts are a primary determinant of cognitions that may affect later conduct problems.

Taken together, the empirical data suggest that individual characteristics involving emotions, biological predispositions, and cognitive processes are intricately intertwined with social experience rather than being juxtaposed to it. Thus, a social-contextual approach to understanding substance use and abuse is not an alternative to individual-difference theories, but rather it provides a framework for identifying the dynamics through which social settings combine with the qualities of individuals to influence developmental trajectories of risk or resilience to substance abuse and related conduct problems. With these ideas in mind, it is appropriate to turn to consideration of a social-contextual model of child and adolescent substance use. Because of the limited scope of this review and the illustrative nature of the model, the focus is on the immediate social contexts that appear to have the greatest impact on child and adolescent risk for the misuse of substances.

A Developmental Model of Proximal Social-Contextual Influences

Returning to figure 1, three social contexts would appear to have the most direct impact on child and adolescent risk for substance and conduct problems: family, school (educational), and neighborhood (which includes peer influences) (Chassin et al. 1993; Hawkins et al. 1992). These social contexts are affected by conditions and events at the community and societal levels, and by parents' employment, but these latter three contexts should only indirectly influence early development via family, school, and peers, and, thus, will not be considered here (for elaboration, see Conger and Elder 1994). Figure 1 also identifies the period of the life course that the following social-contextual perspective will address, infancy through adolescence. Previous research demonstrates that social experiences and behavioral dispositions present during these early years largely set the stage for adult conduct problems and disorders (Kessler et al. 1994; Sampson and Laub 1993); therefore, a theory of problem behaviors during these initial developmental periods also tells a great deal about the prospects for adulthood. Figure 2 provides an overview of the proposed social-contextual model of child/adolescent risk for conduct and substance-use problems.

The model provided in figure 2 draws upon the five general themes discussed earlier. First, consistent with the first two themes, the model shows that, in most instances, substance misuse during adolescence is the end result of a developmental progression beginning with behavioral dispositions such as oppositional conduct during the preschool years (Hawkins et al. 1992). Consistent with theme #3, the model shows that both early and later conduct problems find their social origins in the family; and consistent with theme #4, these early family influences produce a feedback loop through which the developing child affects and is affected by family processes and relationships. Theme #5 proposes that the behaviors of family members will be related to school, neighborhood, and peer characteristics, and these pathways are shown in the model. These broader social contexts also are shown to influence the family, primarily through their efforts on the child or adolescent. Finally the model takes into account the earlier noted role of genetic vulnerabilities and their interrelations with social context. Genetic influences

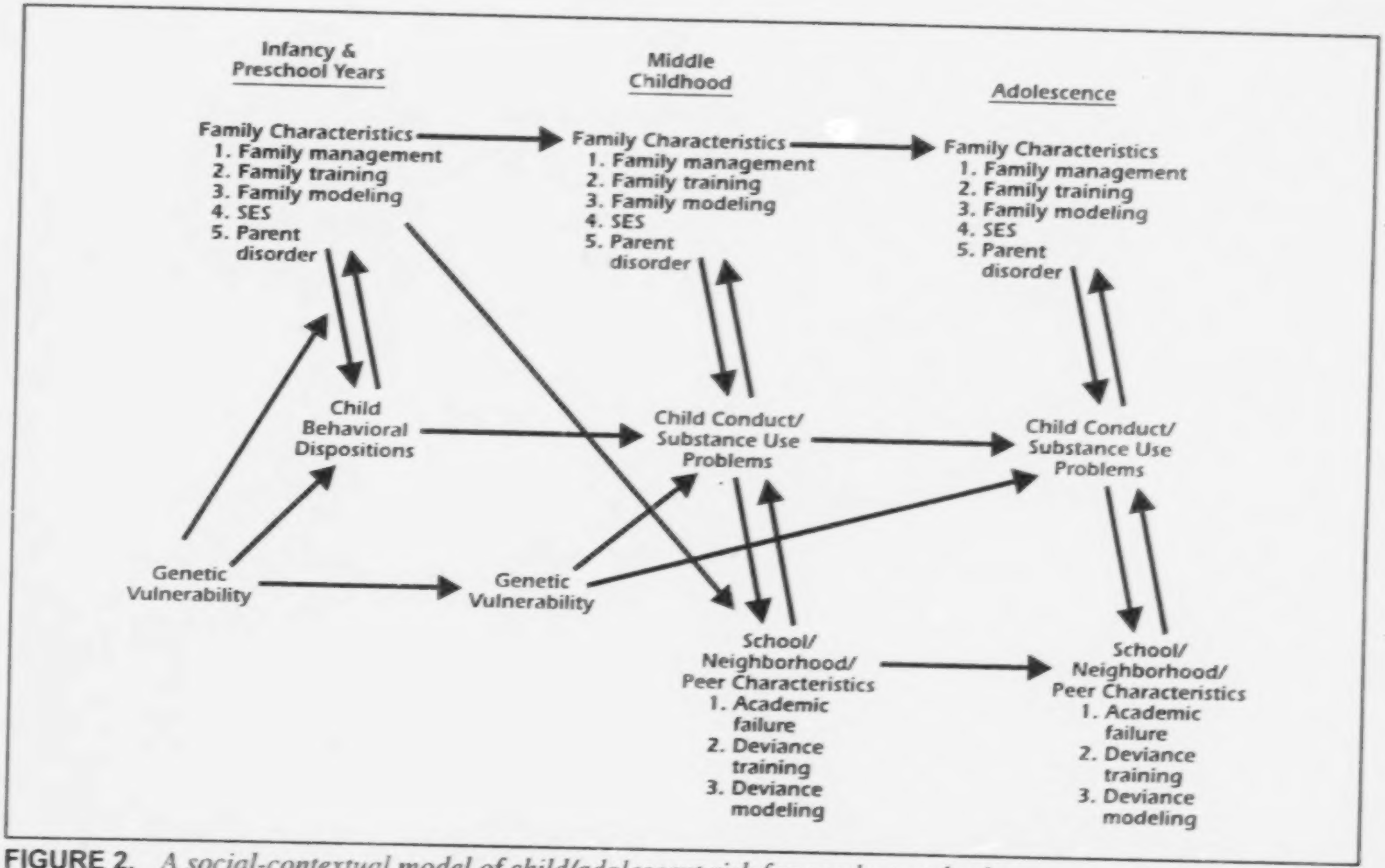
Infancy & Preschool Years
Middle Childhood
Adolescence
Family Characteristics
1. Family management
2. Family training
3. Family modeling
4. SES
5. Parent disorder
Child Behavioral Dispositions
Genetic Vulnerability
Family Characteristics
1. Family management
2. Family training
3. Family modeling
4. SES
5. Parent disorder
Child Conduct/ Substance Use Problems
Genetic Vulnerability
School/ Neighborhood/ Peer Characteristics
1. Academic failure
2. Deviance training
3. Deviance modeling
Family Characteristics
1. Family management
2. Family training
3. Family modeling
4. SES
5. Parent disorder
Child Conduct/ Substance Use Problems
School/ Neighborhood/ Peer Characteristics
1. Academic failure
2. Deviance training
3. Deviance modeling

FIGURE 2. *A social-contextual model of child/adolescent risk for conduct and substance use problems.*

are kept separate from immediate family characteristics because some individuals who importantly contribute to biological heritage (e.g., absent fathers) may not be in the home. The following, more detailed discussion of the model begins with early family influences.

Family Processes and Child Oppositional Behaviors. As shown in the model (figure 1), it is proposed that the primary social context for the development of early antisocial behaviors (such as temper tantrums and noncompliance) during the preschool years will be the family. As noted, these early behavioral problems predict to a number of adjustment difficulties, including later substance use and delinquency. Although many theorists equate family influences only with parents' behaviors, a growing body of literature suggests that other family members, especially siblings and alternative caregivers such as grandparents (Conger and Rueter 1995; Kellam 1990; Lauritsen 1993; Patterson 1988) may have a powerful influence on early conduct problems and later substance use. Most important for purposes of this discussion is the fact that the family itself is a source of multiple environmental influences. Behavior by one family member that fails to restrain or that actually reinforces child misconduct constitutes only one part of the family system and such behavior may be at least partially negated by effective, prosocial behaviors from other family members (e.g., Conger et al. 1994*b*; Egeland et al. 1993; Elder and Caspi 1988; Werner 1993).

With multiple family members, the young child may be presented with multiple and differing contingencies regarding reinforcement, punishment, and modeling of substance use and other antisocial behaviors. For example, Elder and Caspi (1988) showed that arbitrary and irritable behavior by fathers exacerbated conduct problems of preschool children only when mother was aloof and unavailable. The presence of an effective mother, even with significant exposure to what one would label an antisocial father, created an alternative set of environmental contingencies that protected against the development of childhood problem behaviors. Conger and colleagues (1994*b*) identified a similar process during early adolescence. They found that older sibling alcohol abuse predicted drinking problems for an early adolescent in the family only when parents were hostile, coercive, and uninvolved in the focal child's life. Sibling drinking had no effect on a younger adolescent's substance use when parents were meeting their childrearing obligations.

How, specifically, do these observed family processes influence child development? It was noted earlier that there is a broad range of empirical support for the notion that children will be at risk for antisocial behavior if their parents: (1) fail to adequately supervise their activities, (2) do not appropriately discipline them for misconduct, (3) treat children in a hostile or rejecting fashion, and (4) fail to provide approval or other forms of support for conventional or socially desirable behavior. These parental activities relate to dimensions of management, training, and modeling as shown in figure 2. The core of the model involves parental supervision. Parents who do not track, monitor, or otherwise supervise their child's behavior cannot respond contingently to either the child's antisocial or conventional activities (Conger et al. 1992; Gottfredson and Hirschi 1990; Patterson et al. 1992).

Nuturant and Involved Childrearing Practices. On the positive side of the equation, parents who track the activities of the young child will be in a position to provide approval or other forms of material or social benefits when the youngster meets appropriate, conventional standards for conduct that take into account the cognitive, emotional, and motor capacities available at a particular age. This scenario provides a classic example of positive reinforcement through which a particular activity is maintained or strengthened because of the valued outcomes it elicits from the environment. These positively reinforcing behaviors of parents should not only influence differential rates of socially approved child behaviors, they should also affect allocation of time. A developmental history of living in a welcoming and approving home environment should make wandering on the streets with potentially deviant companions less attractive as the child ages and has such opportunities.

Thus, warm and supportive behaviors by parents in general, according to the model, should increase time spent in the conventional surrounds of the home environment, similar to Simmon and Blyth's (1987) conception of the well-functioning family as an "arena of comfort" for children. Moreover, both the positive reinforcement of socially appropriate behavior and the concomitant modeling of such activities by parents should strengthen conventional behaviors by children. A corollary of this process is the acquisition of social skills that will assist the child as he or she becomes increasingly involved outside the home in school, in the community, and with peers (Conger et al. 1992, 1993; Patterson et al. 1992). These skills, in turn, should increase the probability that the child will elicit positively reinforcing outcomes such as acceptance and approval in other conventional environments such as school. These valued outcomes, again, should increase time allocated to conventional activities and environments, thus reducing the time available for unsupervised wandering or associations with deviant companions. Failures by parents to provide these positive experiences will increase risk for child conduct problems both directly as well as indirectly through their relation with peer, school, and neighborhood influences.

Equally, and in some ways perhaps even more important than positive reinforcement contingencies, are family processes that directly punish misconduct or that lead to avoidance conditioning (see Patterson 1988). In the language of operant psychology, punishment occurs when an unpleasant outcome is contingent on a particular response, which, as a consequence of this contingency, is reduced in strength. That is, when particular behaviors regularly lead to aversive outcomes over time, such behaviors should decrease in frequency as a result of these punishing responses. The whole process is labeled punishment. The research shows that when misconduct leads to appropriate and consistent disciplinary action that is not overly harsh or violent (e.g., parent disapproval or withdrawal of valued benefits such as television viewing), the likelihood of child antisocial behavior, including the use of substances, is reduced (Hawkins et al. 1992; Patterson et al. 1992; Sampson and Laub 1993). Young children, of course, come with an extensive repertoire of behaviors such as yelling, kicking, and crying that become increasingly unacceptable with age (Moffitt 1993; Patterson 1982). If these behaviors do not decline to acceptable levels as a result of effective disciplinary practices, the young child is at increased risk for failures in school and peer relations, difficulties that become part of an antisocial syndrome predictive of later delinquent and substance-related activities (Conger and Rueter 1995; Moffitt 1993; Sampson and Laub 1993; Simons et al. 1994*a*).

More generally, it can be expected that consistency across family members (e.g., mother, father, older sibling, and extended relations) in supervision, positive reinforcement for conventional behavior, and appropriate discipline will create an environment in which the varied family relationships available to the child provide social contingencies most likely to reduce risk for antisocial conduct and to increase the probability of success in extrafamilial settings. More specifically, under such conditions the preschool child can maximize benefits and minimize costs across multiple family relationships by engaging in relatively more socially appropriate and relatively fewer antisocial activities. Moreover, children will be more likely to spend time in such a family setting. Failures in consistency across family members should increase risk for conduct problems, but the research tends to show that even one effective caregiver can have an important protective influence (e.g., Egeland et al. 1993).

Hostile, Rejecting, and Coercive Childrearing. In addition to supervision, positive parenting, and a consistent discipline, hostile, rejecting, or coercive parenting has been identified as a risk factor for child conduct problems. Consistent with figure 2, it is expected that parental behaviors of this type affect the young child in at least three ways by (1) providing a model for antisocial conduct, (2) promoting direct training for antisocial behavior, and, (3) in some cases, linking hostile social interactions within the family to a broader network of antisocial and even criminal activities associated with substance abuse. Hostile and rejecting behaviors by parents, both to a specific child and to other family members, model an approach to conducting social relationships that can be mimicked by the young child both within and outside the family. Highly antisocial families typically demonstrate significant levels of aversive interaction (Patterson 1982). Observational learning should lead to the acquisition of similar behavioral tendencies at an early age.

The thesis here, however, is that behaviors must produce some benefit in the environment for them to be maintained across time. A paper by Snyder and Patterson (1995) has demonstrated that such contingencies appear to exist in the families of young, aggressive boys. The authors showed that, for highly antisocial children, aggressive behaviors were likely to terminate the aversive intrusions of mothers. This finding suggests a negative reinforcement process, or avoidance conditioning, in which the child escapes a negative environmental situation (mother's aversive behavior) through aggressive behavior toward the parent. For nonaggressive boys, Snyder and Patterson found that prosocial verbal behavior was an effective means for reducing aversive actions by mothers. Overall, they showed that both level of mother's aversive behavior (suggesting an observational or modeling influence) and mother's contingent reduction of her aversiveness in response to son's aggression (a training effect) were positively and independently related to the frequency of the young child's aggression. Although these findings are suggestive, they need to be replicated with larger samples and with girls as well as boys.

Very little research exists that can provide evidence for the third proposed route of influence for hostile and rejecting parental behavior (i.e., its link to a broader network of antisocial or even criminal conduct in the home). Perhaps most pertinent to this thesis is a report by Richters and Martinez (1993) in which it was found that young children exposed to guns or drugs at home were at high risk for developing behavioral problems and for failing in the early years of elementary school. These adjustment difficulties are established precursors of later substance abuse (Chassin et al. 1993; Elliott et al. 1989; Hawkins et al. 1992). These results also are consistent with other work linking antisocial and criminal conduct by parents to failures in child management skills (Patterson et al. 1992; Sampson and Laub 1993; Simons et al. 1993). It is expected that actual criminal activities by parents or siblings are associated with a generally aversive home environment and that exposure by young children to this degree of antisocial behavior creates a learning situation conducive to experimenting with such behaviors outside the home (Conger et al. 1994*b*; Melby et al. 1993).

Biology, Emotions, and Cognition. It was suggested earlier that there should be a connection between these early environmental influences and children's biological, cognitive, and emotional functioning. As noted, young children may be genetically or environmentally disposed to a biological constitution that either increases the probability of oppositional, noncompliant, and aversive behaviors during the preschool years and/or leads to deficits in learning skills related to prosocial behaviors such as failing to understand the connection between one's own actions and other's response. In this writer's view, these individual differences may create greater or fewer difficulties for family members attempting to socialize the young child, but they do not negate the influence of the multiple family contingencies just described, except in extreme cases of severe biological dysfunction. More generally, it is expected that the reinforcement and punishment processes just described will affect the behavior of most children, but their influence will be conditioned to some degree by a given child's unique biological development. These biological components are included in the model (figure 2) in two ways: through pathways related to genetic vulnerability, and through biologically based aspects of behavioral dispositions that might result from a severely disadvantaged family environment (i.e., low family SES) or from prenatal insults associated with parental disorder (e.g., mother's substance abuse during pregnancy).

Also consistent with earlier discussion, one can expect that these family processes will elicit different emotional responses from young children. In particular, a highly aversive family environment should elicit negative feelings that range from sadness to anger (Conger et al. 1994*a*; Richters and Martinez 1993). Consistent with this thesis, in a public television special on inner-city life (Iowa Public Television 1994), several young African-American males who experienced violence both at home and in the community described themselves as feeling anxious, hopeless, and angry at themselves and others. Such negative emotions impair the development of social and instrumental competencies and also increase risk for later substance abuse (Berkowitz 1989; Chassin et al. 1993; Downey and Coyne 1990; Hawkins et al. 1992), placing the young child at risk for problems within and outside the family. Socialization practices that are clear, consistent, and supportive, on the other hand, should reduce these negative feelings and their possible adverse consequences (Conger et al. 1992, 1993). As with biologically related characteristics, environmentally linked emotions should condition, but not negate the impact of family contingencies on the behavior of the young child. In the social contextual framework presented here (figure 2), the emotional correlates of substance use and related conduct problems are not specified separately but are assumed to be part of the dispositional and adjustment difficulties included in the model.

Finally, these early family experiences will influence the cognitive development of the child. They should make children more or less able to adapt to the early school years, and they may generate attributions about self and others that will affect their ability to socialize appropriately with peers and teachers (Crick and Dodge 1994). Research on the associations among family experience, social cognitions, and later child and adolescent behavior is in its infancy. At this point, no one can say whether these cognitions have a causal influence on social development or whether they are simply one more consequence of the multiple learning contingencies influencing a child's life. Research will be needed to clarify these connections (Patterson 1993). Neither emotions nor cognitive influences are elaborated in the model, but it is assumed that they are an integral part of the specified adjustment problems. Future development of the model, of course, will need to consider the sequencing of biological, emotional, and cognitive variables in greater detail.

Family Substance Use, Parent Disorder, and Socioeconomic Status. Family modeling of antisocial behavior relates not only to child oppositional acts but also to substance use. Parents who are highly antisocial (e.g., through aggressiveness in interpersonal relations) are also more likely to abuse substances and to experience difficulties in life such as work problems (Gottfredson and Hirschi 1990). When parents and siblings drink, smoke, or use illegal drugs, other children in the family are likely to emulate these behaviors and to associate with substance-using peers who reinforce such activities (Chassin et al. 1993; Conger et al. 1994*b*; Conger and Rueter 1995; Hawkins et al. 1992; Melby et al.

1993). Parent substance abuse also acts in a fashion similar to other psychiatric disorders to disrupt effective child management practices and to intensify hostile/coercive parenting, both of which increase a child's risk for adjustment problems (Chassin et al. 1993; Downey and Coyne 1990). Low parental socioeconomic status and family economic problems are related to parent emotional difficulties as well (Conger and Elder 1994).

Moreover, low SES parents often must locate in low-income areas with higher rates of delinquency and substance abuse, thus increasing the child's risk for social reinforcement of such behaviors by peers at school or in the neighborhood. As shown in figure 2, these extrafamilial influences relate back to family processes primarily through their affect on the child's conduct and substance-use problems. One can also expect that substance use by other family members and by peers will affect the child's cognitive appraisals regarding the appropriateness or value of using alcohol, tobacco, or other drugs. That is, children who observe other family members smoking, drinking, or using drugs, or who hear other family members discuss such behaviors in positive terms, will be more likely to acquire beliefs or attitudes consonant with substance use (Hawkins et al. 1992).

Reciprocity in the Family. As shown in figure 2, just as parents, siblings and other kin provide social contingencies for the behavior of the young child, the child plays a similar role for other family members. Consider, for example, a highly antisocial parent who is hostile, coercive, and rejecting toward the child, as well as toward other family members, and who has few childrearing skills. The parent does not carefully monitor or provide appropriate consequences for the child's behavior. The parent's prototypical response to misbehavior will likely involve angry threats or harsh punishment meted out in an inconsistent fashion. In these circumstances, one would predict that the child will emulate the parent's style by attempting to control the parent's behavior through aggressive actions. Consistent with this thesis, Snyder and Patterson (1995) found that mothers and young aggressive children both negatively reinforced one another's aversive behaviors and also reciprocated one another's aggressivity. In a similar fashion, a substance-abusing parent may inculcate such behavior in the child. The youngster's behavior may create problems at school, with peers who are not involved in antisocial activities, and in the home. Thus, the acts of the parents will initiate a feedback loop that further impairs childrearing skills.

In a truly antisocial family, with multiple relationships involving similar dynamics, the young child rapidly develops an interactional style that is unpleasant for other family members, but there is no realization within the family about the basis for this outcome (Conger et al. 1994*a*). That is, through all the yelling and disagreement, parents do not realize that the anger directed toward them by the child is, in large part, a function of their own hostile behaviors coupled with their failure to provide appropriate and consistent contingencies for the prosocial and antisocial behavior of their child. This type of family environment increases risk for internalizing, externalizing, and substance use problems by the child and adolescent (Chassin et al. 1993; Conger and Rueter 1995; Hawkins et al. 1992).

A child who is or becomes particularly difficult to socialize will be a source of punishment for a parent or for other family members. Oftentimes, it is the disadvantaged and otherwise challenged parent who is likely to face the difficulty of a hard-to-control youngster (Moffitt 1993). The model in figure 2 predicts that the response contingencies provided by a troubled child will, over time, lead to withdrawal of parental time, childrearing effort, and attention. If the parent can do nothing to cope effectively with the situation, and especially if the parent does not have the skills needed to deal with a difficult child, the model suggests that over the years the parent should elect to spend relatively less time and effort in the relationship with the poorly adjusted child or adolescent.

In a dysfunctional family, with many antisocial or substance-abusing members, a child's behavioral problems add to the ongoing tensions and conflicts, thus producing further deterioration in parental skills and childrearing activities (see Patterson et al. 1992). The child's own behavior exacerbates and adds to an antisocial family system. These processes are matters of degree, of course, and should escalate into disaster only in the most extreme situations. From a research perspective, very little is known about how these processes of animosity, rejection, and possible disengagement occur. Research is needed to determine how these contingent, reciprocal processes develop across time, and, in the worst situations, lead to abdication of the parental role or to high levels of violence or aggression in multiple family relationships.

From Family to Peer, School, and Neighborhood Relations. The child from a highly antisocial family environment likely will enter school and begin to interact with peers with a well-developed repertoire of oppositional behaviors and few prosocial skills. Once outside the home environment, the child has an increasingly broad selection of possible interactional contexts (see figure 2). The primary opportunities for social involvement will be with peers, in school, or in the neighborhood.

According to the social-contextual model, a child should invest time and effort in those environments that provide the greatest benefits and generate the fewest costs. For a poorly skilled, conduct-problem child from an antisocial family, school will likely be a punitive experience with little chance for academic success and a high probability of disapproval from teachers. School personnel, just like parents, are likely to find interactions with an antisocial child to be extremely aversive, and one would expect that personnel are more likely to invest time and effort in more rewarding children. Even in those situations where teachers make a determined effort to help a troubled youth, highly antisocial parents are unlikely to be cooperative partners in these activities, thus making success even more difficult to achieve.

Just as school success is likely to elude the young, antisocial child, so too does success with peers who are not antisocial (Parker and Asher 1993). The evidence also shows, however, that antisocial youngsters will find friends who have characteristics similar to their own, and these friends will actively reinforce one another's antisocial and substance use behaviors (Chassin et al. 1993; Conger and Rueter 1995; Dishion et al. 1995; Dishion et al. 1994). Contrary to earlier notions that youth with conduct problems do not have close social ties, there is now ample evidence that deviant youngsters form friendships that frequently involve approval for delinquent and substance use behaviors (Chassin et al. 1993; Dishion et al. 1995; Hawkins et al. 1992; Warr and Stafford 1991). Most important, peer reinforcement for conduct problems leads to increases in such behavior across time (Thornberry et al. 1994).

Again, a social-contextual approach suggests that low levels of positive reinforcement for normative behaviors from home, school, and relations with conventional peers, as well as noxious experiences or failures in those environments, should lead to more time and energy being invested in environments in which social approval is available (figure 2). The setting that appears to increase the probability of social reinforcement for the young antisocial child appears to be the environment provided by deviant peers. Importantly, the individual youth contributes to this environment by providing similar reinforcement to his or her deviant friends in a reciprocal process. Also important, these deviant peer relations appear to develop during childhood, before adolescence. Moreover, they foster behavior, such as wandering on the street, that minimizes contact with conventional environments and adult influence and maximizes adventures with similarly antisocial friends (Patterson 1993).

Thus, the social-contextual perspective suggests a developmental sequence, beginning in the family, whereby childhood oppositional behavior and exposure to family misuse of substances dramatically increase risk for later adolescent crime, delinquency, and substance use. When substance use is prevalent in the family, it grants the school-aged child permission to use and also disrupts effective childrearing. Children who grow up in a family characterized by hostile sibling interaction and inept parenting suffer serious social skill deficits. They are aggressive and defiant in their interactions with others, which causes them to be rejected by conventional peers. These socially rejected youth are attracted to each other and form a deviant peer group, which provides a training ground for experimenting with substances and for learning to commit delinquent or criminal acts (see Thornberry et al. 1993). Ultimately, this developmental sequence influences rates of delinquent behavior and substance use at the neighborhood level. Thus, it is proposed that the neighborhood affects individual development, which, in a reciprocal process, influences the quality of neighborhood life.

RESEARCH IMPLICATIONS OF THE SOCIAL-CONTEXTUAL MODEL

The preceding discussion shows that, when the study of social contextual influences is placed within a broader developmental framework, issues of context can be combined with a focus on individual differences to produce a dynamic model of how person and environment interact to produce trajectories of risk or resilience for substance use and abuse. This complex, process-oriented framework improves upon social influence models that neglect the role of individual characteristics as they affect social environments, and it also improves upon individual difference models that neglect the role of social context in shaping individual development. The complexity and developmental nature of the framework, however, place new demands on researchers and on funding agencies in terms of the types of research needed to evaluate developmental change across time within and between relevant social contexts.

To study adequately the full scope of a developmental, social-contextual model, future research must consider the interplay between individual behaviors and social contingencies across time. This approach to social and behavioral research has become more common in recent years; however, the time lags between assessments have often been too large to really provide an understanding of dynamic process in the development of risk for substance misuse (e.g., Jessor et al. 1991). Especially important will be studies of developmental sequences that create risk for or protect against future conduct and substance use problems. For example, very little is known about the mechanisms through which early oppositional behaviors by children affect the childrearing skills of parents. How is it that some parents can deal effectively with these early behavioral difficulties and others can not? Reciprocal processes in parent-child interactions need to be studied during the preschool and elementary school years to contribute to the understanding of the dispositional precursors of later antisocial and substance use behaviors. Such research needs to consider the role of biological, cognitive, and emotional factors for both parents and children in these interactional processes.

As children age and begin to function in social settings outside the home, detailed analyses will be required that trace the influence of home environment through child behavior to these extrafamilial social contexts. How, specifically, do oppositional children from troubled families initiate friendships with similar peers? What are the processes through which these elementary school social ties reinforce deviant activities? The current literature tells a great deal about broad associations between individual behavior and peer characteristics, but provides very little information about the social processes underlying such associations. More adequate empirical information about the dynamic qualities of parent-child and child-peer relationships can lead to the design of more effective early preventive interventions to reduce risk for later conduct problems. Given the known difficulties in attempts to change serious antisocial or substance use behaviors after they occur, such early interventions hold the greatest promise for significantly reducing the prevalence of such problems.

The social-contextual model also suggests that the microsocial processes involving family and peer relationships need to be placed in a broader community context. As indicated by the model, future research needs to examine how relationships between family and other community contexts affect the life course of youth. For example, how do families living in disadvantaged, high-risk areas come together through ties in the neighborhood, the school, political institutions, work settings, or churches to protect their children against such risks? How do parents continue to function as effective caregivers even when severely stressed by job loss or other family crises? This author believes that an emphasis on research across the rural-urban continuum is desperately needed to adequately address these questions. Small rural communities traditionally have enjoyed the strong social ties among adults within multiple community institutions that should improve the monitoring of children's activities and reduce risks for substance use and related conduct problems. The downward economic fortunes of rural communities in recent years, however, have disrupted the adult social networks in many of these towns and villages (Conger and Elder 1994).

Thus, the changing nature of life, which parallels in several ways the misfortunes of many central cities (O'Hare and Curry-White 1992), provides variation in social context that can be used to advantage in studying the role of community influences on child, adolescent, and adult behavioral, emotional, and substance use problems. Moreover, by studying a continuum of communities from the smallest villages to medium-sized cities, such research can identify the degree to which social-contextual influences are simply a function of size of place versus specific activities undertaken by community members. That is, does the close social environment of small communities necessarily lead to social control processes that protect against child behavioral problems, or does close proximity promote adult interactions that could be emulated in larger cities as well as the rural countryside? It can be expected that rural communities will vary in these social control processes and that they are based on specific parent initiatives that could be used in more urban settings. If this assumption can be demonstrated to be true, the lessons learned could significantly improve community-level prevention programs instituted in both rural and urban places.

Clearly, the research agenda required to pursue a developmental approach to the study of social-contextual influences will be demanding, time consuming, and expensive. It requires expertise from multiple disciplines, including developmental and clinical psychology, psychiatry, sociology, and statistics, to mention only a few. If the genetic or other biological substrates suggested by the model are included in a particular program of research, behavioral geneticists and other disciplines from the biological and medical sciences will be required on the research team as well. Large sample sizes will also be needed to assure variation in community and neighborhood characteristics, factors related to risk for substance abuse, and variation in substance use and related psychiatric disorders. For genetically informed research designs, adoption, twin, or other types of sibling strategies must be used. Despite the cost and complexity, the author's view is that significant advances in understanding of substance use problems, and the ability to prevent or treat them, can only be achieved by conducting research that allows the examination of individual development across time within the social contexts that affect it. Research reflecting the rural/urban continuum should be a major component of such investigations.

With this general social-contextual framework in mind, the discussion later in this volume turns to the special qualities of rural America that have importance for studying, understanding, and preventing substance use and abuse. To fully test the elements in the social-contextual model and to effectively apply them to reducing rates of substance abuse, research must be conducted that encompasses the full range of possible variations in family, neighborhood, and community characteristics. Without research on rural populations, variations along these social dimensions will be truncated and research findings will be unable to adequately test either their theoretical or practical importance. Indeed, a later discussion argues that the study of rural people is as important for understanding and preventing substance abuse in urban as it is in rural places.

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The Special Nature of Rural America

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The chapter on "The Social Context of Substance Abuse" reviewed the complex processes through which individual characteristics, family processes, and community structures come together to influence risk for substance use and abuse. This chapter considers the fact that individuals and families live in communities that vary greatly in terms of cultural and ethnic heritage, socioeconomic conditions, geographic placement, and population density. The drama of individual lives, including achievements and behavioral dysfunctions, is played out against the backdrop of these important social, economic, and cultural variations. The following discussion indicates how significant distinctions between and within the categories of urban and rural locations play a major role in influencing how the dynamics portrayed in the aforementioned chapter actually occur in daily life.

Researchers and policymakers concerned about the problems of substance abuse have turned their attention from a singular focus on urban America to consider as well the special health needs of rural people. Multiple concerns have lead to this new interest in rural issues. A major factor has been the acute and chronic economic problems in rural areas that have generated increased risk for emotional, behavioral, and substance use disorders (Conger and Elder 1994). Contrary to the myth that rural communities are well insulated from the problems of mainstream America, there is growing recognition that entrepreneurs of illegal drugs have found new market niches in America's small towns and countryside (O'Dea and Murphy, this volume). Moreover, a careful consideration of the epidemiological evidence suggests that, while the drugs of choice may differ somewhat in urban and rural places, substance abuse in the rural United States is quite comparable to that in large population centers (Wagenfeld et al. 1994).

This chapter first considers demographic and socioeconomic dimensions of rural life that should relate to problems of substance use and abuse. For example, the discussion considers the definition of rural places and how they have been changing in a fashion that should affect drug, alcohol, and tobacco use. After exploring the various dimensions of rurality, the focus turns to the relationship between geographic location and substance use. How do rural and urban places differ in terms of problems with the consumption of both licit and illicit drugs, and how can these differences be used to inform research on substance use and abuse? Finally, the chapter considers some of the implications of rurality for the delivery of treatment and prevention services.

FINDING RURAL AMERICA

According to the Bureau of the Census (1993), approximately 62 million Americans (24.8 percent of the total population) lived in rural areas in 1990. The other 75.2 percent of the population lived in places designated as urban. The definitions of rural and urban, however, are far from straightforward. For example, places with populations of 2,500 or less would normally be defined as rural unless they are in certain States or are located within a larger metropolitan area (Bureau of the Census 1993). An urban place, on the other hand, is normally defined as an area with 50,000 or more inhabitants. Thus, in practice, rural is often defined as places that are not urban (i.e., that are nonmetropolitan). This approach is not without problems. For example, people living in metropolitan areas can sometimes be designated as rural and citizens living in rural places can sometimes be classified as metropolitan (Hewit 1989).

One must question, however, whether an exact definition is essential. Simply put, a crude dichotomy differentiating rural from urban cannot capture the qualities of place that may be important in understanding how people come to abuse, or fail to abuse, various substances. Patton (1989, p. 1,012) notes that investigators need to think not of an urban/rural dichotomy, but rather of an urban/rural continuum ". . . from the remote frontier communities to the larger rural cities." For many purposes, contrasts between rural and urban or metropolitan and nonmetropolitan are a good first step in beginning to understand the influence of place on substance use problems. Ultimately, however, researchers will want to investigate substance use in relation to gradations in population density, as will be illustrated in later sections of this chapter.

Especially important, size of place can be directly related to variations in the cultural traditions, social structures, economic conditions, and interactional processes that are likely to have a direct influence on drug, alcohol, and tobacco use. For example, both distance from metropolitan areas and population density influence economic opportunity as well as communication beyond the borders of a specific community. Moreover, geographic isolation can create cultural barriers that may either exacerbate or reduce risks for substance abuse.

As shown in table 1, all regions of the country have significant numbers of rural citizens. The table provides the percentages of the population living in rural and urban areas of the United States in 1990. For each region, the table identifies the States with the highest and lowest percentages of urban and rural citizens. For example, although about 25 percent of the total population is rural, 31.4 percent of the people in the southern United States live in rural areas. In West Virginia, the majority of the population lives in rural places (63.9 percent). By way of contrast, only 13.7 percent of those living in the western United States are designated rural, even though almost one-half of Montana's citizens (47.5 percent) live in rural places. The data reveal then, that rural America is all around, from the high-density, industrialized Northeast to the stereotypically rural States of South Dakota and West Virginia.

TABLE 1. *Percentage of people living in rural areas in 1990.*

	Rural areas		
Regions	Overall percentage	Highest percentage	Lowest percentage
Northeast	21.1	-	-
New Jersey	-	-	10.6
Vermont	-	67.8	-
Midwest	28.3	-	-
Illinois	-	-	15.4
South Dakota	-	50.0	-
South	31.4	-	-
Washington, DC	-	-	0.0
West Virginia	-	63.9	-
West	13.7	-	-
California	-	-	7.4
Montana	-	47.5	-

SOURCE: U.S. Bureau of the Census 1993.

RURAL DISPERSION, DIVERSITY, AND DISADVANTAGE

The pervasiveness of rural places throughout the United States has important implications for the relationship between substance abuse and geographic location. First, developments in urban America can more easily influence rural life than has been true in the past. Thus, increasing urban drug problems are easily transported to rural places and rural drug dealers easily find markets in urban areas. Indeed, the contemporary interstate highway system has created the same opportunities for illegal commerce as it has for legal business activities. As a result, there is little impediment in the flow of substances and practices regarding their use between places with low and high population densities. Illegal drugs manufactured in rural areas easily find urban markets, and vice versa, and rural areas are providing major new markets for the current oversupply of drugs in large cities (O'Dea and Murphy, this volume).

A second implication of the wide dispersion of rural places across the United States is that rural America is highly diverse. The people living in rural places represent an array of ethnic and cultural traditions that is as varied as that found in large population centers. This variety in the rural social landscape is seen across the country and ranges from Native Americans in all corners of the land to Hmong tribespeople from Southeast Asia in rural Iowa to African-Americans in the rural South. Rural America encompasses multiple ethnic groups that have varying histories of discrimination, disadvantage, and cultural practices, including substance use and abuse. In Iowa, for example, some rural ethnic groups have strong admonitions against drinking while others consider the consumption of alcohol to be a normal part of everyday life. These different traditions obviously affect the orientation of individual group members toward the use of alcohol.

Rural America is diverse not only in its ethnic and cultural makeup but also in its economic structures and fortunes. Although there are wealthy rural citizens, rural America has experienced devastating economic reversals in farming, manufacturing, and extractive industries during the past two decades. Indeed, despite the conventional wisdom that rural America is a stress-free bastion of tranquillity and health, studies have shown that rural Americans are more likely than urban citizens living in the suburbs to suffer socioeconomic disadvantages approximating those of individuals living in high-risk central cities (O'Hare and Curry-White 1992). Other research shows that economic problems such as these are associated with risk for mental disorder and functional impairment in rural, urban, minority, and majority populations (e.g., Brody et al. 1994; Conger et al. 1994; Kessler et al. 1994; McLoyd et al. 1994).

If it ever was true that rural people were especially protected against problems associated with substance use, the stressful economic conditions in many sectors of contemporary rural society have substantially reduced such insulation. During the past several years, much of rural America has moved from the severe economic dislocation of the 1980s to a period of chronic economic stagnation or decline, with poverty rates more akin to those in central cities than to the country as a whole (O'Hare and Curry-White 1992). Consistent with these trends, Davidson (1990) documents the rise of "America's Rural Ghetto" and notes that, in a fashion similar to inner-city urban areas (e.g., Wilson 1987), the devastation of the farm crisis years along with failures in other rural industries has led to selective out-migration of the most prosperous, educated, and younger rural citizens, leaving behind the most disadvantaged and elderly portion of the population.

A number of reports have been supportive of Davidson's view. They suggest that disruptions in the rural economy have given rise to inner-city-like subcultures in rural towns and population centers. For example, U.S. News and World Report magazine (Whitman et al. 1994) identified Waterloo, Iowa, as one of the communities in rural areas that contains a growing white underclass, defined as people living in census tracts where 40 percent or more of the residents live below the official Federal poverty line. Such places are marked by conditions similar to those existing in poor, inner-city neighborhoods, including high crime rates and substance abuse, a large proportion of single-parent households, domestic violence, and intergenerational continuity in poverty. More work is needed to improve understanding of this phenomenon in small, rural cities. Even with current evidence, however, the results suggest that there are important gradations within rural experience, from the open countryside to villages to small towns and cities, that have an important influence on rates of substance use. These differences among rural areas in risk for substance use again call into question the utility of a simple urban/rural dichotomy.

Despite the fact that chronic economic stress in rural areas is a relatively recent phenomenon in much of the Midwest, it has long been characteristic of many sections of the rural South. Importantly, these rural economic conditions, whether recent or chronic, give rise to the problematic social environments just discussed, environments that greatly increase risk for substance abuse among adults, adolescents, and children. In light of the earlier discussion regarding a rural-urban continuum, it is especially important to note that the underclass characteristics associated with both poverty and inner-city life are more prevalent among rural citizens than among urban people living in the metropolitan areas located outside a central city core.

For example, using census data, O'Hare and Curry-White (1992) define as underclass those individuals who: (1) have not completed high school, (2) receive public assistance, (3) are never-married mothers, or (4) are long-term unemployed males. Again, these are characteristics associated with the intransigent social and behavioral problems of poor, inner-city areas. The researchers report that in 1990, 3.4 percent of central city inhabitants belonged to the underclass compared to 2.4 percent of rural residents. Only 1.1 percent of urban residents not in the inner city meet these criteria for underclass membership. These findings indicate that important distinctions are possible within urban experience similar to those noted earlier for rural places. These additional categories of suburban versus central city have a major influence on socioeconomic risks for substance abuse. These findings suggest again that a simple urban/rural distinction is too crude to identify important variations in both urban and rural life that influence the developmental trajectories of individual people. The simple observation that rural residents are twice as likely to be members of the underclass than urban residents living outside central cities underscores the need for finer distinctions than a simple urban/rural dichotomy. Failure to go beyond the dichotomous approach to studying urban/rural differences in life experience will impede efforts to understand fully the relation between place of residence and the probability of high or low rates of substance use and abuse.

SUBSTANCE USE AND THE RURAL/URBAN CONTINUUM

The Monitoring the Future study provides a good, general overview of differences in substance use among high school students by geographic location (Johnston et al. 1994). Table 2 provides data from the study for the prevalence of substance use as reported by high school seniors nationwide in 1993. The table subdivides the sample by geographic location. The first column refers to seniors living in the 16 largest metropolitan statistical areas (MSAs) in the country, including cities like New York, Chicago, Los Angeles, and Houston. These places represent areas typically thought of as urban, with large numbers of disadvantaged, central-city residents.

TABLE 2. *Annual prevalence (percentage) for substance use in 1993 by high school seniors in metropolitan and nonmetropolitan areas (does not include medications taken by a doctor's orders).*

Type of substance	Residential status		
	Large MSA	Other MSA	Non-MSA
Marijuana	29.1	26.2	23.1
Inhalants	7.4	7.3	6.0
Hallucinogens	7.3	8.1	6.3
LSD	6.7	7.6	5.6
Cocaine	2.7	3.9	2.7
Crack	1.3	1.8	1.4
Other cocaine	2.6	3.6	2.0
Heroin	0.6	0.5	0.5
Other opiates	3.1	3.7	3.7
Stimulants	6.5	8.5	9.8
Barbiturates	2.6	3.1	4.3
Tranquilizers	2.9	3.6	3.7
Alcohol	77.9	75.2	76.0
Been drunk	49.1	49.1	51.0
Steroids	0.7	0.9	2.2

KEY: MSA = metropolitan statistical areas.

SOURCE: Johnston et al. 1994.

The second column in table 2 refers to high school seniors living in a county or group of adjacent counties with at least one city or two adjoining cities with a population of 50,000 or more. Column three includes everyone else (i.e., the nonmetropolitan or rural population). The first remarkable finding in the table is that nonmetropolitan youth are not substantially different from those living in larger cities in terms of their reported substance use. For example, 2.7 percent of nonmetropolitan seniors reported using cocaine in 1993, exactly the same percentage as youth living in large MSAs. In some instances (e.g., the use of barbiturates), rural teenagers actually report greater substance use than seniors living in either type of metropolitan area.

Also significant is that in many instances the prevalence of substance use is greater in the smaller rather than larger MSAs. For example, 8.1 percent of youth in the smaller MSAs report using hallucinogens compared to 7.3 percent in the large MSAs. Even cocaine use, stereotypically considered a large city phenomenon, is more likely to occur among high school seniors in the smaller MSAs. It is important to keep in mind that the places referred to by the middle column in the table include many rural population centers (e.g., Waterloo, Iowa). These findings provide support for the notion that much of the socioeconomic risk for substance use is as characteristic of rural communities and rural population centers as it is of large urban areas. The findings also emphasize the need to examine population density as a gradient rather than as an either-or dichotomy of rural/urban. Only in this fashion can investigators pinpoint the often curvilinear trends in substance use in relation to size of place, as shown in table 2.

The importance of moving beyond a rural/urban dichotomy is further illustrated in table 3. The percentages in table 3 refer to the daily use of substances by high school seniors during the past 30 days in 1993 rather than to any use during the past year as profiled in table 2. For these measures of heavy use of the most frequently ingested substances, there are few differences among seniors residing in places that vary by population density. The percentage of seniors using marijuana is slightly higher in the large MSAs, binge drinking is more prevalent in rural nonmetropolitan areas, and daily use of one or more cigarettes is very slightly higher in moderate-sized MSAs. Considering tables 2 and 3 together, the variations in table 2 substance prevalence rates across area probably indicate variability in access and perhaps social control, whereas the similarities in rates in table 3 probably indicate that the percentage of those who will become problem users in the adolescent population is relatively small and stable across settings. Thus, once the opportunity presents itself, those adolescents with a propensity for antisocial behavior will likely engage in it.

TABLE 3. *Thirty-day prevalence (percentage) of daily substance use in 1993 by high school seniors by metropolitan and nonmetropolitan residence.*

	Residential status		
Type of substance	Large MSA	Other MSA	Non-MSA
Marijuana	2.5	2.4	2.3
Alcohol	2.7	2.3	2.5
Five or more drinks in a row	27.6	26.5	29.2
Cigarettes (1 or more daily)	17.3	19.7	19.2
Half pack or more daily	9.1	11.2	11.7
Smokeless tobacco	1.7	3.0	5.2

SOURCE: Johnston et al. 1994.

These data provide strong support for the hypothesis that rural and urban areas experience comparable socioeconomic, ethnic, historical, and cultural diversity that affects risk for substance use. In addition, a wide range of studies has reported very similar findings, suggesting either that there are few differences in drug use between rural and urban areas or that any differences are rapidly narrowing (Wagenfeld et al. 1994). But, if the risks of drug, alcohol, and tobacco use are essentially the same in rural and urban areas, what is special about rural places? And, most important, what new information about risk for substance use can be generated by focusing attention on the relationship between population density and substance use and abuse?

THE SPECIAL NATURE OF RURAL SUBSTANCE USE

There seem to be at least three unique qualities of rural life that give it a special importance in the study of substance use and abuse. The first two relate to social structures and processes that influence risky behaviors, while the third concerns difficulties in the delivery of intervention and prevention programs. Survey findings reported by Edwards (this volume) from the Tri-Ethnic Center for Prevention Research at Colorado State University help to illustrate the first special quality of rural places.

Edwards provided findings from the American Drug and Alcohol Survey for 1991-93 and reported on lifetime prevalence of substance use among 12th grade adolescents from across the United States. The results discriminated among very small rural communities of less than 2,500 population, nonmetropolitan places not adjacent to a metropolitan county, nonmetropolitan places adjacent to a metropolitan county, and metropolitan counties. An important quality of very small communities should be that friendship and support networks among adults are much more extensive than in urban places. According to Sampson (1992), when adults in a community know each other and work together to supervise and direct the activities of youth, there will be less deviant behavior among teenagers in the community. Edwards' data are consistent with this thesis.

Edwards' results showed that lifetime prevalence and heavy involvement in most types of substance use were lowest in the smallest communities. These are the communities one would expect to have the most extensive and integrated adult interpersonal networks. The data also showed, however, that these networks of social control must degenerate fairly rapidly with even modest increases in population density in that the nonmetropolitan, nonadjacent communities had substance use rates quite similar to even the largest metropolitan places. These findings are consistent with the results from the Monitoring the Future study reviewed earlier.

A first very important, special quality of rural America, then, is that it contains the gradations in population density, from the smallest rural places to rural population centers, that can provide the information needed to understand how adults can come together to provide communitywide social control mechanisms capable of reducing substance use and abuse. In effect, rural communities varying in size provide important laboratories for the study of social control processes that seem to be fairly effective in reducing risk for substance abuse. These communities have much clearer boundaries for studying such social processes in that they are not immediately adjacent to other social units, as would be typical in larger metropolitan areas. One expects that the study of how adults come together to jointly influence the development of their children will provide important information for urban as well as rural populations. Indeed, it seems reasonable to expect that disadvantaged urban neighborhoods will be unlikely to solve their substance abuse problems on a household-by-household or family-by-family basis. The study of rural communities should identify important strategies of adult cooperation that will be equally important to urban citizens.

Edwards' data also point to a second feature of rural life that has important implications for the study and understanding of substance use. Rural communities with different cultural and ethnic heritages, divergent histories of discrimination and disadvantage, and varying socioeconomic characteristics have very different rates of substance use. For example, Edwards' analyses of data from three different very small communities (population less than 2,500) showed that the prevalence of multidrug use by 12th graders in one of the communities was over three times higher than in metropolitan areas in general. In the second community, the prevalence rate was about 25 percent higher than in metropolitan places, and in the third community there was no multidrug use.

The special importance of these findings is that each place represented a very different community history, a different ethnic and cultural tradition, and different socioeconomic circumstances. Each community, again, provides a fairly well-bounded laboratory in which ethnic, cultural, historical, and socioeconomic influences on risk for substance use and abuse can be studied. Large urban places, in which these various dimensions of community are often blurred and intermingled, make the study of these various processes much more difficult.

Thus, a second special quality of rural places is that they provide a research setting in which the multiple facets of social, economic, psychological, historical, and cultural experiences and characteristics can be studied in relatively pure form as they relate to the risk for alcohol, drug, and tobacco abuse. The understandings generated by such research conducted in rural areas will provide a means for generating new knowledge about similar processes in urban settings. The final special characteristic of rural places concerns the delivery of programs aimed at reducing substance use.

RURAL SERVICES FOR SUBSTANCE USE AND ABUSE

The characteristics of rural America just reviewed focused on the special strengths these areas provide as research laboratories for the study of substance use. This section considers the third special quality of rural

America, the difficult obstacles it poses for the delivery of effective substance use services.

Medical care in general profits from the economies of scale provided by a large population base. Only when a sufficient clientele exists within a given geographic area can specialized services be provided in an efficient and effective manner. For example, it would be unreasonable to provide advanced cardiovascular surgery in most rural hospitals simply because there is an insufficient patient base to maintain the skills or cover the expenses of a team of such specialized medical personnel.

Rural places face the same difficulty when it comes to providing specialized mental health or substance abuse services (Wagenfeld et al. 1994). The lower population density of rural areas simply makes it more difficult to provide specialized substance use or mental health services. As a result, rural people often must travel long distances to get the programs or care they need to remedy or prevent substance use problems. The provision of services in rural areas also needs to accommodate the sometimes different beliefs and traditions of such places.

For example, compared to urban residents, rural people tend to be more family centered and rely more heavily on family members for help and support during times of need (Conger and Elder 1994). They also tend to be more dubious of the effectiveness of mental health or substance use services (Wagenfeld et al. 1994). These characteristics can create additional problems in the delivery of rural health programs.

The problems associated with providing programs to reduce substance abuse in rural areas are the same as the difficulties in the delivery of rural health care in general. Although several professional bodies have made recommendations for dealing with these problems, and although some research has been done to provide better information for finding effective solutions (e.g., the National Advisory Committee on Rural Health 1991), the study of service delivery in rural America remains in its infancy. This part of the special nature of rural America is in desperate need of a significant research base that will lead to creative solutions to the rural health care dilemma (see also Wagenfeld et al. 1994).

DISCUSSION

This chapter has addressed certain special characteristics of rural America that should influence risk for alcohol, tobacco, and other drug use in rural areas. The first task was to attempt to define rurality, with the conclusion that there is no simple way to distinguish rural from urban. Rather, the evidence suggests that a more meaningful approach to understanding the effect of population density on substance use is to use a graduated approach, from degrees of rural to degrees of urban. When this strategy is followed, one finds both similarities and differences in substance use problems and processes along the continuum from rural to urban.

Regarding similarities, the data reviewed here demonstrated that rural places have undergone tremendous social and economic change in the recent past. Today, many people living in rural areas face a degree of economic disadvantage more similar to residents of impoverished central cities than to those living in the suburbs. And, contrary to common stereotypes, rural places experience all of the ethnic, cultural, historic, and economic diversity of urban America. The stresses and strains of rural life create the same risks for alcohol, tobacco, and other drug use as found in metropolitan centers. Indeed, the review of data from large nationally representative samples regarding substance use prevalence showed that there is little difference between larger and smaller places in terms of the proportion of the population using substances of some kind. However, nonrepresentative community studies suggest that there is great variability among rural communities in terms of rates of substance abuse.

In addition to similarities, there is a special nature to rural America that should influence how to investigate its relation to substance use. First, smaller communities oftentimes demonstrate greater solidarity and network support among adults in the community than is typical in larger population centers. These adult networks are an effective means for reducing the initiation and maintenance of substance use and abuse by teenagers and young adults. By studying rural social systems of various sizes, important insights can be gained that can be applied to the solution of substance abuse problems in communities that range from villages to metropolitan centers.

In addition, it was noted that rural places provide an opportunity to study ethnic subgroups, historical events, cultural traditions, and community beliefs and behaviors in relative isolation. Because rural communities vary widely in terms of the degree of substance abuse that they experience, researchers can connect unique combinations of these community characteristics with the rates of substance abuse in them, thus generating a good estimate of the degree of association between substance abuse and these community qualities without the confounds that would exist in the study of urban places. Because rural areas typically do not have the same degree of enmeshment of multiple cultural, socioeconomic, and ethnic characteristics within the limited confines of a large metropolis, even rural population centers provide a better means for identifying the links between community characteristics and substance abuse problems than do urban areas. These community characteristics are likely to play a central role in determining risk for substance use and in providing the means for creating effective programs to reduce such problems.

The final special quality of rural places that was considered was the role of population density in the delivery of health services in general and substance use and abuse services in particular. The evidence suggests that effective means have not been found for solving the problem of providing specialized substance use services in widely dispersed populations. There is a great need for additional research in this area. In addition to examining the difficulties of dispersed populations, services and prevention research in rural areas also will need to improve understanding of the belief systems that create opportunities and problems in delivering effective health services. Quite likely, solution of these problems in rural areas will provide insights for the delivery of care to underserved urban citizens as well.

Thus far, however, one special quality of rural places that often goes unmentioned has not been emphasized. Researchers need to reinforce the reality that 25 percent of the U.S. population lives in rural areas, almost 62 million people (Bureau of the Census 1993). The bias toward studies of urban America often treats rural places as relatively unimportant, at best a residual category to urban. Obviously, this creates great peril to the future if the health and welfare of such a large segment of society continues to be neglected.

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Drug and Alcohol Use Among Youth in Rural Communities

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INTRODUCTION

Characterizing variations in substance use by youth residing in rural areas is not a straightforward undertaking due in part to difficulties in defining rural, and in part to differences in community characteristics across whatever definition is used.[1] The primary purpose of this chapter is to compare data on the prevalence of alcohol and other drug use by 8th and 12th graders across four sizes of communities, from very small rural to metropolitan. Community size classifications were based on Bureau of the Census county-level data and the Beale code (Lobao 1990) and include schools in counties that: (1) have populations of < 2,500; (2) are nonmetropolitan, nonadjacent (i.e., communities in counties with no city of 50,000 or more inhabitants and that are not integrated economically and socially with a population center of 50,000 or more in a nearby county); (3) are nonmetropolitan, adjacent (i.e., communities in counties with no city of 50,000 or more inhabitants but that are adjacent to a metropolitan county); and (4) are metropolitan counties. Community size contrasts are presented for drug use patterns by gender, perceived availability of substances and alcohol, and other drug-related problems.

BACKGROUND

Over the past several years, a number of studies of substance use in rural communities have appeared, but compared with urban-oriented research, data are lacking that could lead to an understanding of how substance use impacts rural communities. The two major national representative studies—Monitoring the Future (Johnston et al. 1992, 1993) and the National Household Survey on Drug Abuse (Courtless 1994)—have typically reported only nonmetropolitan-metropolitan comparisons. Nevertheless, reports from both studies have shown that while past rates of alcohol and other drug use were considerably lower in nonmetropolitan than metropolitan communities, the gap has been closing. In part this convergence is explained by the greater decline of drug use among youth living in large cities than among those living in other areas. Thirty-day prevalence rates of alcohol use by 12th graders in large cities dropped from 78 percent in 1980 to 53 percent in 1991, a decrease of 25 percentage points. By contrast, in nonmetropolitan areas the decrease was only 17 percentage points, from 69 percent in 1980 to 52 percent in 1991 (Johnston et al. 1992).

Three important observations concerning rural substance use emerge from an edited review (Edwards 1992). First, rates of substance use for rural and urban adolescents are converging. Second, the etiology of substance use among rural and urban populations is similar, presumably because the impact of family, peers, and school on drug use is relatively constant. Third, variability across rural communities suggests that community-level factors influence use. It is this third area in which rural-based research generally has been lacking. What have been generically classified as rural communities differ greatly along a number of dimensions such as population density; distance from metropolitan areas; ethnic and racial makeup; age and gender profiles; levels of unemployment and poverty; type of employment base (e.g., manufacturing, farming, mining, fishing, timber, mixed); availability of medical/mental health facilities and other treatment services; and prevailing attitudes about the importance of community efforts for the prevention of substance use. It is not possible at this time to assess the impact of all of these factors with the two national representative samples because either the data are not available or the rural subsample is too small for meaningful analyses. Therefore, examination of these variables using nonrepresentative samples offers an opportunity to develop an understanding of community influences and provide information that can be utilized in planning and policymaking.

The data presented here are from The American Drug and Alcohol Survey™ (ADAS) (Oetting et al. 1985; Oetting and Beauvais 1990), a commercially available, school-based drug and alcohol survey.[2] Because data are collected by community, analyses presented here are based on the aggregate data from approximately 250 communities that administered the ADAS to 8th and/or 12th graders in their schools during the 1992-93 and 1993-94 school years. Data from these school years were combined so there would be sufficient numbers of communities in each size category for meaningful analyses.[3] The ADAS database is a aggregation of numerous samples of convenience and includes more than 225,000 students from more than 200 communities each year with wide geographic dispersion across the United States.

PREVALENCE OF SUBSTANCE USE BY ADOLESCENTS IN RURAL AREAS

Lifetime Prevalence

Lifetime prevalence rates of alcohol, tobacco, and other drug use are based on responses to questions asking, "Have you ever tried (name of substance)?" Rates for 8th and 12th graders by community size are presented in table 1. There are significant differences across community size for 8th graders in rates of having tried alcohol, marijuana, stimulants, and tobacco, and for 12th graders in having tried marijuana, stimulants, cocaine, and lysergic acid diethylamide (LSD). With the exception of smokeless tobacco, these differences are accounted for by lower rates in the smallest rural communities (populations < 2,500). Rates in the nonmetropolitan-nonadjacent and adjacent communities are similar to metropolitan rates, with two exceptions. First, the rates of marijuana use for metropolitan 8th and 12th grade youth are substantially higher than those for youth in midsized communities. Lifetime prevalence rate for metropolitan 12th graders is twice that of their counterparts in small, rural areas (41.9 percent versus 20.7 percent), whereas rates for communities in the middle two size categories are about halfway between these two extremes. Second, a somewhat similar pattern is apparent for LSD; the rate reported by metropolitan 12th graders is almost 2½ times as high as the rate in the smallest, rural areas, with the larger nonmetropolitan communities falling in between. These findings are consistent with findings from the 1987-88 and 1988-89 ADAS (Peters et al. 1992), although the magnitude of differences reported at that time was generally smaller. The large difference in lifetime prevalence of marijuana use between rural and metropolitan 12th graders apparent in these data was not evident at that time.

Last Month Prevalence

Although lifetime prevalence rates are useful in gauging the amount of exposure a given population of youth has had to drugs, they are not useful in determining current levels of use; whether a drug has been used in the past month is more appropriate for this purpose. Responses to the question, "How often in the last month have you used (name of drug)?" have been collapsed to indicate any use of alcohol, tobacco, and other drugs in the month before administration of the survey and are presented in table 2. Consistent with the lifetime prevalence data, there are few significant differences across community size except for marijuana and

LSD, where rates reported by metropolitan youth are higher than those of their rural counterparts. Rates are particularly low for youth living in communities with populations less than 2,500. Metropolitan youth report much higher rates—1 in 5—compared with 1 in 13 for youth in communities with populations less than 2,500. Daily use of cigarettes is less prevalent among youth in these very small communities as well, while differences among the larger nonmetropolitan and metropolitan communities are negligible. However, compared with metropolitan youth, daily smokeless tobacco use is much more prevalent among nonmetropolitan youth, with 1 in 10 12th graders in small rural communities reporting daily use.

Drug Involvement Prevalence

Prevalence rates do not take into consideration the frequency of use or the combinations in which drugs may be used. To get a more accurate picture of adolescent drug use, the ADAS utilizes a total drug involvement score based on an empirically derived, hierarchical classification system that utilizes frequency, recency, type of drug(s) used, and combinations of drugs used. Based on their pattern of use, each individual is assigned to 1 of 34 drug use styles or types, which then can be grouped into categories representing high, moderate, and low involvement with substances. (See appendix for further description of the drug involvement score.)

Table 3 shows the percentage of youth in each drug use category across community size. This measure is helpful in gauging the extent to which drug and alcohol use are an integral part of a youth's life. This is important because the more integral these behaviors are, the more they may interfere with important developmental and socialization processes, such as relationships with parents and peers and school success. While differences in drug use involvement scores across community size are not large at the 8th grade level, there are some significant differences, and more are apparent by 12th grade.

For 12th graders, there are small differences in the percentage of heavy alcohol users across community size. However, compared with larger communities, significantly more youth in the smallest communities are light alcohol users. The drug involvement classification system is hierarchical, therefore these findings do not necessarily mean that more rural youth are light users of alcohol, rather it indicates that more rural youth fall into the category of light alcohol use unaccompanied by other drug use.

TABLE 1. *Lifetime prevalence of substance abuse by grade and community size.*[a,b]

	8th grade				12th grade			
		Nonmetro	Nonmetro			Nonmetro	Nonmetro	
Ever tried	< 2,500	Nonadj.	Adjacent	Metro	< 2,500	Nonadj.	Adjacent	Metro
Alcohol	64.4%	69.1%	71.1%	72.4% *	90.0%	90.3%	89.7%	91.1%
Gotten drunk	22.5%	29.0%	28.2%	26.9%	68.8%	71.0%	68.5%	69.1%
Marijuana	8.6%	11.8%	12.7%	14.9% **	20.7%	32.2%	34.0%	41.9% *
Stimulants	2.9%	6.2%	5.7%	5.2% *	7.9%	13.6%	12.9%	10.8% *
Cocaine	2.0%	2.2%	2.5%	2.8%	3.6%	5.8%	6.0%	7.2% *
Crack	2.1%	2.0%	2.1%	2.5%	1.8%	3.0%	2.5%	2.8%
Inhalants	11.2%	15.6%	14.4%	15.5%	9.5%	11.8%	10.7%	11.1%
Legal stimulants	1.4%	2.3%	2.3%	2.1%	2.4%	4.0%	5.1%	5.1%
LSD	2.6%	3.7%	3.8%	4.2%	5.4%	7.1%	9.1%	13.3% ***
Heroin	1.6%	1.9%	1.8%	2.1%	0.6%	1.1%	1.3%	1.9%
Cigarettes	38.3%	47.7%	48.9%	48.1% *	60.4%	65.7%	61.6%	62.7%
Smokeless tobacco	23.9%	25.9%	24.1%	18.4% ***	44.9%	40.9%	34.4%	30.8%
# of communities	21	47	63	122	20	49	61	120

KEY: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$. a = Data are community averages from the combined 1992-93 and 1993-94 ADAS databases. b = Size designations are based on Census Bureau county-level data and Beale code classifications. "Nonmetropolitan" counties are those that do not have a city with 50,000 or more inhabitants and that are not integrated economically and socially with a population center of 50,000 or more in a nearby county. "Adjacent" and "nonadjacent" refer to whether the nonmetropolitan county is or is not adjacent to a metropolitan county.

TABLE 2. *Substance use by grade and community size.*

	8th grade				12th grade			
		Nonmetro	Nonmetro			Nonmetro	Nonmetro	
Used in last month	< 2,500	Nonadj.	Adjacent	Metro	< 2,500	Nonadj.	Adjacent	Metro
Alcohol	23.7%	27.5%	27.5%	30.0% *	58.6%	54.7%	52.7%	57.7%
Gotten drunk	7.1%	10.0%	9.1%	9.4%	31.8%	37.4%	32.3%	35.9%
Marijuana	3.4%	4.6%	4.5%	5.9%	7.5%	10.8%	13.1%	20.7% ***
Stimulants	0.8%	2.1%	2.0%	2.0% *	1.5%	3.9%	3.8%	2.9%
Cocaine	0.5%	0.7%	0.8%	1.0%	0.6%	1.9%	1.8%	2.0%
Crack	0.4%	0.6%	0.6%	0.7%	0.3%	0.2%	0.8%	1.0%
Inhalants	4.0%	5.6%	5.2%	5.6%	1.0%	1.4%	2.3%	2.1%
Legal stimulants	0.1%	0.4%	0.4%	0.3%	0.3%	0.3%	0.6%	0.6%
LSD	0.7%	1.1%	1.1%	1.8% ***	1.3%	1.8%	3.2%	3.7% ***
Heroin	0.5%	0.6%	0.7%	0.6%	0.2%	0.1%	0.4%	0.6%
Cigarettes daily	5.3%	8.2%	10.1%	9.1% **	13.7%	19.8%	19.2%	21.2% *
Smokeless tobacco daily	3.4%	4.2%	3.8%	2.3% **	10.1%	12.3%	7.2%	4.8% ***
# of communities	21	47	63	122	20	49	61	120

KEY: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

TABLE 3. *Drug involvement by grade and community size.*

	8th grade				12th grade			
		Nonmetro	Nonmetro			Nonmetro	Nonmetro	
	< 2,500	Nonadj.	Adjacent	Metro	< 2,500	Nonadj.	Adjacent	Metro
1. Multi-drug users	1.0%	1.6%	1.9%	1.9%	1.2%	3.4%	3.5%	4.0%
2. Stimulant users	0.2%	0.4%	0.4%	0.5%	0.5%	0.8%	1.3%	1.3% **
3. Heavy marijuana users	0.2%	0.1%	0.2%	0.3%	0.3%	0.6%	0.7%	2.6%
4. Heavy alcohol users	1.1%	1.7%	1.3%	1.3%	7.8%	12.0%	7.2%	8.7% *
Total high involvement	2.5%	3.8%	3.8%	4.0%	9.8%	16.8%	12.7%	16.6% *
5. Occasional drug users	6.7%	9.5%	9.9%	10.0%	6.0%	6.6%	7.2%	6.6%
6. Light marijuana users	2.2%	2.8%	3.2%	4.0%	5.4%	7.5%	7.6%	12.4% ***
Total moderate involvement	8.9%	12.3%	13.1%	14.0% *	11.4%	14.1%	14.8%	19.0% ***
7. Drug experimenters	9.1%	10.5%	10.3%	11.0%	10.5%	14.8%	14.9%	13.7%
8. Light alcohol users	13.7%	13.8%	13.2%	14.2%	36.1%	21.3%	23.6%	20.6% ***
9. Negligible or no use	65.8%	59.6%	59.6%	56.8% **	32.2%	33.0%	34.0%	30.1%
Total low involvement	88.6%	83.9%	83.1%	82.0% *	78.8%	69.1%	72.5%	64.4% ***
# of communities	21	47	63	122	20	49	61	120

KEY: * = $p < 0.05$;** = $p < 0.01$; *** = $p < 0.001$.

TABLE 4a. *Lifetime prevalence of substance use by community size, grade, and gender (8th grade).*

Ever tried	< 2,500 Male	< 2,500 Female	Nonmetro Nonadjacent Male	Nonmetro Nonadjacent Female	Nonmetro Adjacent Male	Nonmetro Adjacent Female	Metro Male	Metro Female
Alcohol	69.2%	60.3%	71.4%	67.0%	73.2%	69.1%	74.3%	71.1%
Gotten drunk	23.7%	21.3%	31.3%	26.6%	28.5%	26.8%	27.7%	26.1%
Marijuana	10.3%	6.9%	13.8%	9.5%	14.4%	11.3%	16.8%	12.9%
Stimulants	3.5%	2.4%	6.1%	6.2%	5.7%	5.9%	4.9%	5.4%
Cocaine	2.9%	1.1%	2.4%	1.9%	2.9%	2.2%	3.1%	2.3%
Crack	2.7%	1.5%	2.1%	1.8%	2.5%	1.8%	2.5%	2.2%
Inhalants	13.4%	8.8%	16.1%	15.0%	14.8%	14.0%	15.4%	15.8%
Legal stimulants	2.1%	0.9%	2.5%	2.0%	2.3%	2.2%	2.3%	2.0%
LSD	3.8%	1.3%	4.3%	3.1%	4.3%	3.4%	4.6%	3.9%
Heroin	2.3%	0.9%	2.3%	1.6%	2.2%	1.4%	2.5%	1.8%
Cigarettes	39.3%	37.3%	48.0%	47.8%	49.6%	47.4%	48.2%	48.7%
Smokeless tobacco	39.6%	9.5%	41.5%	10.9%	41.0%	9.1%	29.7%	7.2%
# of communities	21		47		62		120	

TABLE 4b. *Lifetime prevalence of substance use by community size, grade and gender (12th grade).*

	< 2,500		Nonmetro Nonadjacent		Nonmetro Adjacent		Metro	
Ever tried	Male	Female	Male	Female	Male	Female	Male	Female
Alcohol	92.0%	88.0%	92.0%	88.5%	89.5%	90.0%	91.2%	90.7%
Gotten drunk	73.6%	64.5%	74.5%	67.3%	72.9%	62.8%	71.9%	65.6%
Marijuana	22.9%	19.3%	36.5%	28.7%	38.4%	27.8%	45.4%	37.6%
Stimulants	9.8%	6.4%	14.5%	13.5%	14.1%	11.7%	10.6%	11.8%
Cocaine	4.7%	2.8%	7.1%	3.8%	7.7%	4.2%	8.2%	6.7%
Crack	2.0%	1.7%	3.5%	1.6%	3.6%	1.4%	3.4%	2.6%
Inhalants	13.6%	5.9%	15.4%	8.7%	13.0%	8.6%	13.9%	8.7%
Legal stimulants	3.1%	1.9%	4.6%	3.3%	6.2%	4.0%	5.6%	5.0%
LSD	7.2%	3.8%	9.0%	5.7%	10.9%	7.3%	14.4%	11.8%
Heroin	0.9%	0.4%	1.5%	0.7%	1.9%	0.7%	2.1%	1.9%
Cigarettes	61.9%	58.4%	65.2%	63.5%	62.8%	59.4%	61.6%	63.8%
Smokeless tobacco	66.5%	24.2%	65.8%	15.1%	58.7%	10.7%	50.5%	11.2%
# of communities	20		45		61		120	

It is possible that some youth from larger communities are using alcohol in about the same quantity and frequency as the rural youth, but that they are also using marijuana or some other drug, which causes them to be classified at a higher involvement level. As might be expected from prevalence data, marijuana use is a major factor in explaining the differences across communities of various sizes. Few in-school youth are heavy marijuana users no matter what the community size, but almost 3 times as many metropolitan 12th graders use marijuana as those living in the smallest rural communities (15.0 percent versus 5.7 percent).

GENDER DIFFERENCES

Consistent with some studies of rural populations, rates for marijuana and alcohol use by males are higher than those for females, although the differences are small (Gleaton and Smith 1981; Globetti et al. 1978; Harrell and Cisin 1980; Preston 1968-69). Moreover, these data do not reflect significant gender differences across community size. The one major exception to this finding is for smokeless tobacco: Males are far more likely than females to have tried it, regardless of community size. The issue of gender differences in rural areas deserves more attention. The number of very small rural communities included in this study may be too small to reveal differences in gender use patterns from those of larger communities. Further, the wide-ranging gender-by-ethnicity differences in alcohol use found by Edwards and associates (1995) suggest that ethnicity may differentially affect drug use among males and females. Other factors such as the nature of the primary employment in rural communities may reinforce or diminish male-female role differences, and, in turn, impact gender patterns of drug use.

PERCEIVED AVAILABILITY OF SUBSTANCES

Table 5 shows perceived availability of drugs based on those who responded either "very easy" or "fairly easy" to the question, "How easy do you think it would be for you to get each of the following types of drugs if you wanted some?" More youth in metropolitan and nonmetropolitan communities indicate that it would be "easy or fairly easy" to get drugs than youth in the smallest rural communities. In addition, for some drugs such as marijuana and LSD, perceived availability is also lower in the two nonmetropolitan community types

TABLE 5. *Perceived availability: Percent who think it would be easy or fairly easy to get drugs by grade and community size.*

	8th grade				12th grade				
		Nonmetro	Nonmetro			Nonmetro	Nonmetro		
	< 2,500	Nonadj.	Adjacent	Metro	< 2,500	Nonadj.	Adjacent	Metro	
Alcohol	80.0%	78.1%	79.2%	81.0%	95.7%	96.5%	95.9%	96.2%	
Marijuana	29.5%	36.0%	39.4%	44.0% ***	58.3%	77.3%	77.0%	82.5%	***
Stimulants	22.8%	28.4%	28.1%	30.6% **	42.7%	58.5%	58.0%	57.5%	***
Cocaine	16.9%	20.1%	21.2%	23.6% **	28.6%	41.2%	38.8%	46.4%	***
Inhalants	67.8%	67.0%	68.2%	68.8%	73.6%	82.6%	78.4%	81.1%	**
LSD	14.6%	19.6%	20.6%	25.0% ***	28.6%	42.6%	42.3%	53.0%	***
Other psychedelics	14.0%	18.1%	18.7%	21.7% ***	24.9%	37.9%	34.7%	42.4%	***
Downers	25.3%	28.6%	28.9%	31.0% *	38.9%	56.9%	52.9%	54.1%	***
PCP	13.8%	16.8%	17.6%	20.4% ***	21.8%	30.8%	28.9%	34.1%	***
Heroin	15.1%	17.2%	19.3%	20.8% *	21.1%	29.6%	27.2%	32.7%	***
Other narcotics	16.2%	20.8%	22.9%	23.5% **	25.9%	38.2%	35.3%	40.5%	***
Tranquilizers	21.3%	24.4%	24.3%	26.2%	32.7%	47.7%	43.6%	46.0%	***
Cigarettes	79.7%	78.5%	80.3%	81.3%	93.5%	95.2%	95.4%	95.3%	
# of communities	21	47	63	122	20	48	61	120	

KEY: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

than in the metropolitan communities. Given the prevalence rates for these two drugs, the assessment of availability is probably accurate. Overall, there appears to be some protection for youth from the smallest rural communities in that drugs may be less available to them. However, this protection apparently does not extend to larger communities that are some distance from metropolitan areas. The proportions of youth from these communities who believe that drugs are readily available are about the same as those of the metropolitan communities.

CONTEXTS IN WHICH ALCOHOL AND OTHER DRUGS ARE USED

Figure 1 shows the percent of 12th graders, by community size, who responded to the question, "During the last 12 months, where have you used alcohol?" Response categories indicated the number of times alcohol had been used in each setting and included "never," "1 to 2 times," "3 to 9 times," or "10 or more times." With one very important exception, there are few differences by community size in when and where youth indicate they use alcohol. The exception is "drinking while driving around." Half of the 12th graders in the smallest rural communities report using alcohol "while driving around," as opposed to only one in four metropolitan 12th graders. In nonmetropolitan, nonadjacent communities, two out of five youth report using alcohol "while driving around" compared with a rate of one in three for youth in nonmetropolitan, adjacent communities. Although levels of alcohol use do not differ by community size, the low population density and geographic isolation of rural communities generally means that young people spend more time in cars than their metropolitan counterparts. Distances that must be traveled to school and entertainment events as well as to friends' homes are more likely to be greater for very rural youth than for those from larger communities. The implications of these findings are obvious, especially when one considers the unlit and poorly marked conditions of many country roads.

Where and when youth use drugs differs considerably across community size. Responses by 12th graders to the question, "During the last 12 months, where have you used marijuana or any other illegal drug (except alcohol)?" showed similar contexts for drug use as those reported for drinking, with the most frequently mentioned settings being "at weekend parties" and "at night with friends." Interestingly, almost as

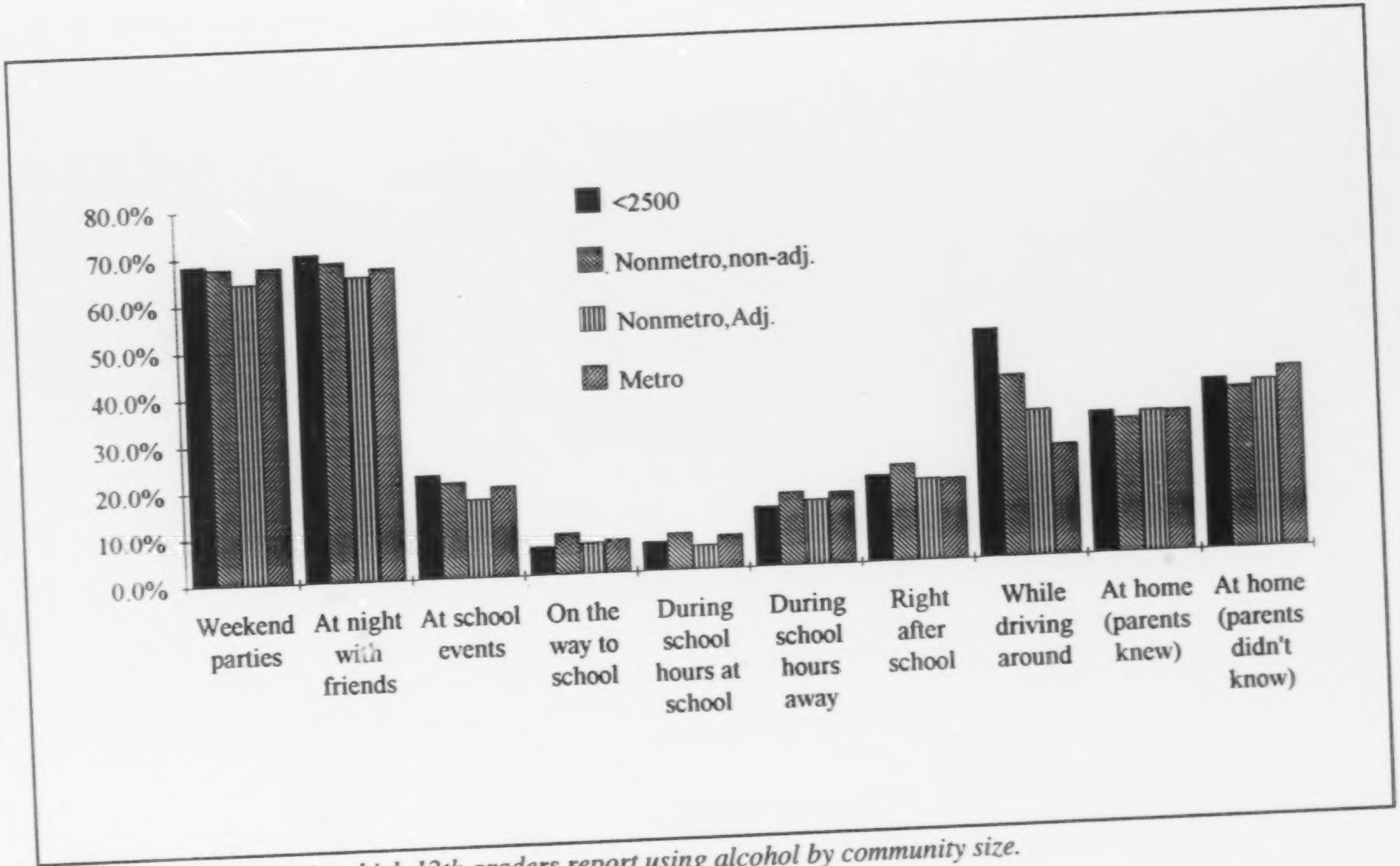

FIGURE 1. *Contexts in which 12th graders report using alcohol by community size.*

many metropolitan youth indicate they use drugs "while driving around" as indicated that they use alcohol "while driving around."

PROBLEMS REPORTED BY 12TH GRADERS FROM DRUG AND ALCOHOL USE

Two of the questions asked on the ADAS have to do with problems related to alcohol and drug use. Although prevalence rates of lifetime and recent alcohol use are similar across community size, 12th graders from the smaller rural communities report as many or more problems from their alcohol use as do their counterparts in larger communities. As noted above, 12th graders from small rural communities are much more likely to report that they use alcohol "while driving around"; the problems they report are consistent with this. There is a significant difference across community size in endorsement of the items "gotten a traffic ticket" and "had a car accident," with the rates being higher in more remote rural communities. Moreover, despite the fact that there was no significant difference across community size in percentage of youth who have been drunk, rural youth may be consuming more alcohol when they do get drunk. The evidence that suggests this is the higher rates of endorsement for "passed out" and "couldn't remember what happened" among those residing in the more remote areas. As might be expected based on the higher prevalence of rates for drug use in metropolitan and larger nonmetropolitan communities, drugs cause more problems for metropolitan youth than youth in smaller communities, basically because more of them are using drugs (figure 2). The higher level of drug use among metropolitan youth is reflected in the problems they are having from their drug use (figures 3 and 4). One in 7 metropolitan youth report problems with schoolwork due to drug use compared with about 1 in 12 youth from small, rural communities. In summary, substance use is causing significant problems for youth whether they live in remote rural areas or metropolitan communities, but for rural youth the substance is most likely to be alcohol, whereas urban youth are more likely to report problems from drug as well as alcohol use.

COMMUNITY VARIABILITY

The data presented thus far would indicate that there is a progression in prevalence of drug use with the least use occurring in small, rural communities followed by larger nonmetropolitan communities, and the most use in metropolitan communities.

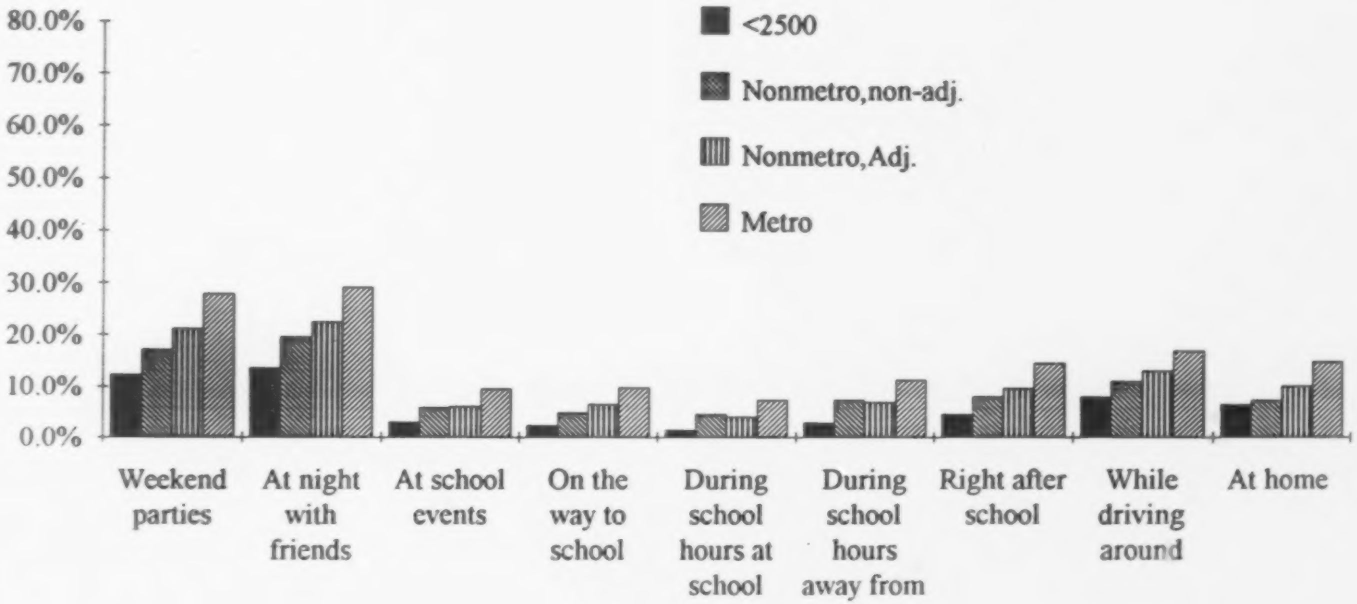

FIGURE 2. *Contexts in which 12th graders report using drugs by community size.*

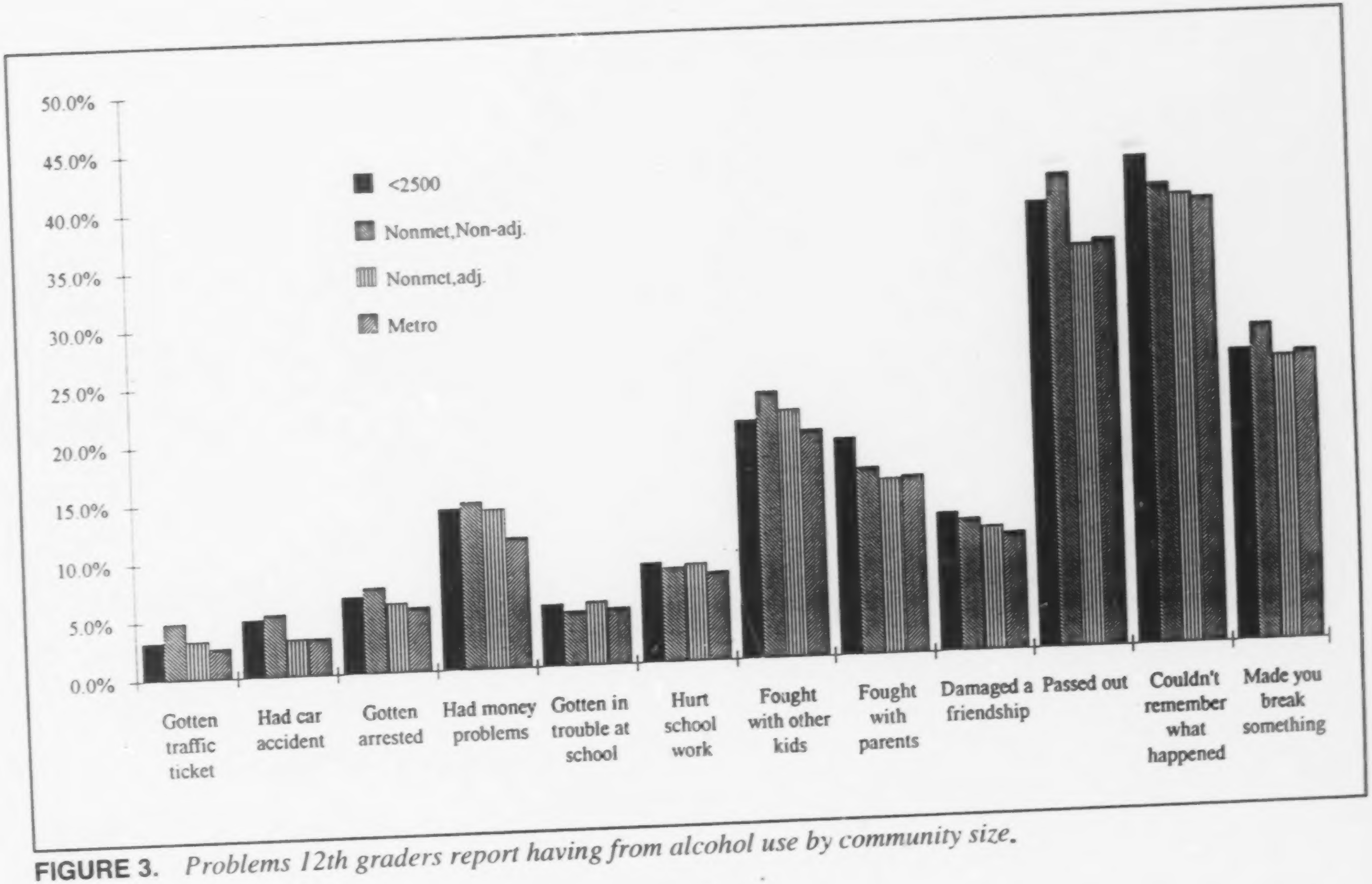

FIGURE 3. *Problems 12th graders report having from alcohol use by community size.*

74

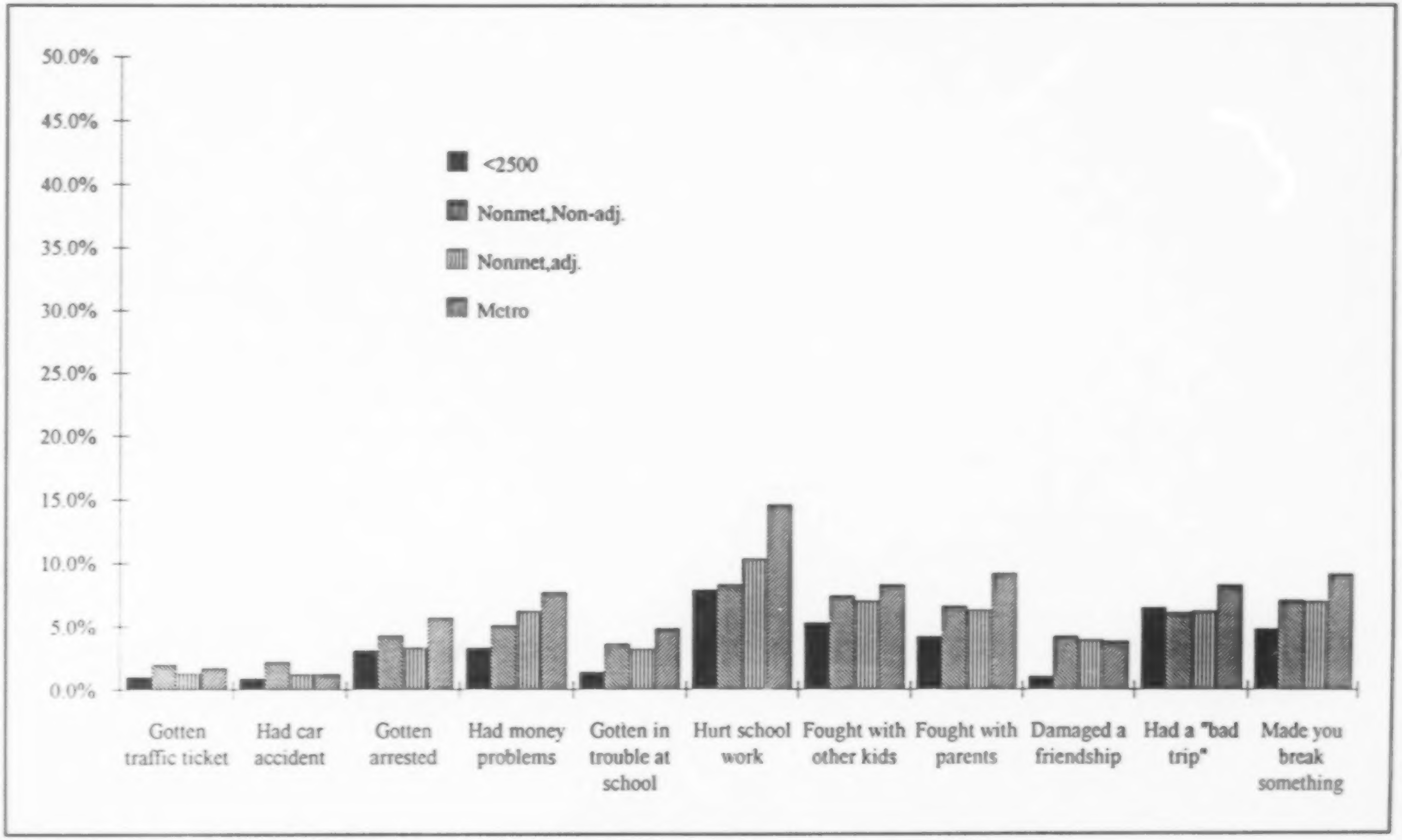

FIGURE 4. *Problems 12th graders report having from their drug use by community size.*

However, it is important to note that there is a great deal of variation in youth substance use from one small, rural community to another. To illustrate this variability, table 6 presents substance use prevalence data from two midwestern communities. These communities are within 150 miles of each other, have populations of less than 5,000, and are in counties that are nonmetropolitan and not adjacent to metropolitan counties. Clearly, substance use is a much greater problem among youth in community A than in community B. At the time of the survey, one in four 12th graders in community A had used marijuana within the past month. The level of hallucinogen use reported by 12th graders in community A is also unusually high, with nearly one in four having tried them and 10 percent having used them recently. Less than 1 in 5 12th graders is drug free in community A, compared with almost half of the students in community B. The problem in community A is not confined to older youth, however. Only about half of the eighth grade students are drug free, compared with approximately three-fourths of their counterparts in community B.

Clearly the prevention and intervention needs of these communities are not the same. The widespread substance use by youth in community A calls for immediate, substance-specific intervention including community-wide measures. Appropriate activities might include town forums to educate youth, parents, and community members about the extent of drug use in the community along with a discussion of family, peer, school, and community factors affecting the level of use. Participants at these forums also might generate suggestions for ways to increase monitoring and supervision of activities by parents, school personnel, youth activity leaders, and law enforcement officials. At the same time, a more generalized approach to substance education and prevention must be considered, with attention to improving the family, school, and community environments so that youth are offered more supportive situations for the development of healthy and successful lifestyles. Community B apparently has some existing elements that are supportive of youth remaining drug free. This community can concentrate on identifying these protective factors and building on them as they develop programs and activities to reach youth who are drug involved. Even though the level of drug involvement among youth is less in community B than in community A, it is important that community members recognize that drugs are available and are being used. Moreover, this community has a substantial youth alcohol problem that needs to be addressed.

TABLE 6. *Variability in drug use patterns in small communities.*[1]

	Community A 7-8th grade	Community B 8th grade	Community A 12th grade	Community B 12th grade
Ever tried				
Alcohol	69.0%	65.0%	92.0%	80.0%
Marijuana	21.0%	8.0%	46.0%	8.0%
Stimulants	9.0%	5.0%	36.0%	14.0%
Inhalants	21.0%	11.0%	18.0%	14.0%
Hallucinogens	7.0%	2.0%	23.0%	4.0%
Used in past month				
Alcohol	34.0%	21.0%	73.0%	40.0%
Marijuana	9.0%	3.0%	26.0%	4.0%
Stimulants	4.0%	3.0%	5.0%	4.0%
Inhalants	11.0%	5.0%	3.0%	6.0%
Hallucinogens	3.0%	1.0%	10.0%	2.0%
Drug involvement				
High				
1. Multi-drug users	5.0%	2.0%	5.0%	4.0%
2. Stimulant users	1.0%	0.0%	0.0%	2.0%
3. Heavy marijuana users	0.0%	0.0%	0.0%	0.0%
4. Heavy alcohol users	2.0%	0.0%	13.0%	4.0%
Moderate				
5. Occasional drug users	11.0%	7.0%	13.%	6.0%
6. Light marijuana users	6.0%	2.0%	15.0%	2.0%
Low				
7. Tried a drug	12.0%	9.0%	15.0%	8.0%
8. Light alcohol users	9.0%	11.0%	21.0%	29.0%
9. Negligible or no use	55.0%	70.0%	18.0%	46.0%

KEY: 1 = Data are from two midwestern communities with populations < 5,000.

SOURCE: Table adapted from Edwards 1994.

CONCLUSION

In comparing the substance use of youth by community size, patterns do emerge. First, these data illustrate that there is a lower aggregate level of drug use among youth in very small, rural communities (populations less than 2,500) than among those in larger rural and metropolitan communities. For example, there are particularly large differences for marijuana use, with the percentage of metropolitan youth who have tried marijuana being almost twice that of small rural community youth and significantly higher than that of other nonmetropolitan youth. In addition, problems related to drug use are much higher for metropolitan than nonmetropolitan and rural youth. This is not surprising given the higher rate of marijuana use among metro youth. However, there is little difference in the percentage of 12th graders using alcohol by community size, but the use of alcohol causes more problems for rural youth than for other youth. This may partially be because fewer alternative activities (such as movies, coffee houses, pool halls, recreation centers) are available to rural youth and drinking becomes one of the primary purposes for congregating, which may lead to more consumption at any given time. Also, the relative proximity of youths' homes and other congregating points where youth drink in metropolitan areas precludes as much traveling by car as is necessary in less densely populated communities.

Community risk for youth substance abuse is not simply a matter of population density or proximity to urban areas. The contrast between the two rural communities presented here illustrates that even communities similar in size and geographic location can have very different youth drug use profiles. Further research is needed to pursue the issue by asking, "What community factors account for differences in drug use?" One thing is clear, however: using national level data to characterize rural drug use is inadequate to capture community variability. Rural communities differ on myriad factors such as economic conditions, ethnic representation, strength of religious institutions, local versus consolidated schools, and proximity to marijuana-growing or amphetamine production areas. There may also be community variability on such factors as which drugs are being used, whether younger or older students are involved, availability of drugs and alcohol, and substance use patterns over time.

The data presented here clearly illustrate that even the smallest communities are not immune from substance use problems. However, variability across communities makes it imperative that each individual community assess its particular problems so that limited resources may be appropriately targeted. Rural communities cannot afford to take a shotgun approach and deal with all substances more or less equally in prevention programs.

NOTES

1. When one talks about "inner cities," although across the country they may vary widely in many ways, there are generally some commonalities. Most places defined as "inner cities" are plagued with poverty, high unemployment, higher rates of crime, and other assorted social ills. So-called rural communities, however, can be widely diverse in their attributes. In some places residents may not remember the last time they locked the door to their home; in others, residents may feel unsafe both in and out of their home unless they are literally armed. The common ground rests solely on the classification as rural and the low population density in the immediate vicinity. To classify large numbers of communities, however, one must rely on some standard such as population, distance from an urban community, and/or economic dependence on a nearby urban community. The Beale code often used by the Department of Agriculture does a fairly good job of separating communities on these factors, but there are problems with this classification as well. For example, it is based on county designations, the presence or absence of population centers of a given size within the county, and whether the county is adjacent to a county with a large urban population center. Unfortunately, this does not take into consideration the geographic size of the county—in the West, many counties cover literally thousands of square miles, while in the Midwest and East counties are generally much smaller, so that the designation of nonadjacent county may mean very different things in different parts of the country.

2. The American Drug and Alcohol Survey™ is available through RMBSI, Inc., P.O. Box 1066, Ft. Collins, CO 80522; telephone 1-800-447-6354.

3. It should be noted that although they technically fit the category of metropolitan, the communities classified as "metropolitan" in the ADAS database are predominantly communities with populations of less than 500,000. Of the 120 schools included in the metropolitan sample, approximately two-thirds are in counties with largest place

< 500,000 and one-third are in counties with largest place > 500,000. These data should not, therefore, be considered representative of the largest cities in the United States (for detail on larger communities, see Johnston et al. 1993).

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ACKNOWLEDGMENTS

The American Drug and Alcohol Survey school and community reporting system was developed under Small Business Innovative Research (SBIR) grant R44 DA03656 from the National Institute on Drug Abuse (NIDA) to RMBSI, Inc. R.W. Edwards, Ph.D., served as principal investigator. Analyses of ADAS databases and preparation of this chapter were supported under NIDA grant P50 DA07074 to Colorado State University, Tri-Ethnic Center for Study of Drug Abuse Prevention. E.R. Oetting, Ph.D., served as principal investigator.

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APPENDIX

The Drug Involvement Scale utilized in the ADAS reporting system is an empirically derived, hierarchical measure of the extent to which drugs and/or alcohol are an integral part of a youth's life. The scale classifies youth into 1 of 34 different styles, each depicting a pattern of drug use based on quantity, frequency, and whether or not the drug is used in combination with another. These styles are then collapsed into more general groups that can be further categorized as representing high, moderate, or low involvement with substances.

Style	Group	Level of involvement
1. Drug dependent	1. Multi-drug	1. High
2. Polydrug		
3. Heavy downers		
4. Uppers and downers		
5. Marijuana and downers		
6. Young polydrug		
7. Heavy uppers	2. Stimulant use	
8. Uppers and hallucinogens		
9. Marijuana and cocaine		
10. Marijuana and uppers		
11. Heavy marijuana and other drugs	3. Heavy marijuana	
12. Heavy marijuana and heavy alcohol		
13. Heavy marijuana only		

Style	Group	Level of involvement
14. Alcohol dependent or predependent 15. Heavy alcohol, occasional other drug 16. Heavy alcohol and marijuana 17. Heavy alcohol only	4. Heavy alcohol	
18. Marijuana and occasional other drug 19. Light marijuana, occasional other drug 20. Occasional use of drugs only 21. Occasional inhalant 22. Occasional downers 23. Occasional uppers 24. Occasional other drug	5. Occasional drug	2. Moderate
25. Light marijuana and alcohol 26. Light marijuana	6. Light marijuana	

Style	Group	Level of involvement
27. Tried more than one drug	7. Drug experimenters	
28. Tried one drug		
29. Tried marijuana		
30. Light alcohol	8. Negligible or no use	3. Low
31. Very light alcohol		
32. Used alcohol		
33. Tried alcohol		
34. Never tried		

Traffic and Illegal Production of Drugs in Rural America

Patrick J. O'Dea, Barbara Murphy, and Cecilia Balzer

INTRODUCTION

This chapter provides an overview of nationwide trends in the illegal traffic of methamphetamine, methcathinone, cannabis, and crack cocaine. Methamphetamine and methcathinone, both powerful stimulants, are manufactured in clandestine laboratories located primarily in the western and midwestern United States, respectively. Marijuana is grown both outdoors, in small, widely scattered plots, and indoors, with the aid of sophisticated hydroponic equipment (two additional controlled substances derived from the cannabis plant—hashish and hashish oil—are in limited demand in the United States and are not produced domestically to any significant degree). Crack is cocaine base that is converted from cocaine powder using a cheap, safe, and efficient conversion process. All of these drugs are produced, distributed, and consumed domestically, often in remote rural locations across the country (although the cocaine available in the United States is imported from South America, virtually all crack is converted locally from cocaine powder; also, even though Mexican marijuana commands a large portion of the U.S. market, the domestic production of high potency (sinsemilla) marijuana has been increasing).

METHAMPHETAMINE

Methamphetamine is a stimulant similar in some ways to adrenaline and has a pronounced stimulant effect on the central nervous system. Ingestion of stimulants may not only result in a temporary sense of exhilaration, superabundant energy, hyperactivity, extended wakefulness, and a loss of appetite, but may induce irritability, anxiety, and apprehension. According to data from the Drug Abuse Warning Network, injection remains the primary route of administration of methamphetamine.

Methamphetamine is available in varying quantities in most areas of the United States except for the northeastern and mid-Atlantic regions where, for the most part, it is encountered infrequently. While it is also available in limited retail amounts in the southeast and somewhat larger quantities in the midwest, availability is primarily concentrated in the western and southwestern United States.

Currently, methamphetamine prices range from $4,500 to $25,000 per pound, $400 to $2,600 per ounce, and $40 to $150 per gram. Nationwide purity of methamphetamine at the ounce and gram levels averaged 72 percent and 68 percent, respectively, during 1994, compared to 59 percent and 56 percent, respectively, during 1993.

Most of the methamphetamine sold on the illicit market originates from clandestine laboratories operating throughout the country. These laboratories are often makeshift operations that can be easily disassembled and transported to a new location. Equipment ranging from homemade manufacturing setups to sophisticated commercial laboratory apparatus is utilized in the production process. According to Drug Enforcement Administration (DEA) reporting, 263 methamphetamine laboratories were seized in 1994, accounting for 86 percent of all seizures implicating clandestine, dangerous drug laboratories. Although these laboratories were confiscated in approximately 30 States, the clandestine manufacture of methamphetamine is centered primarily in the western and southwestern United States. For example, of the 263 laboratories seized, 115 (44 percent) were confiscated in California, where the overwhelming majority of illicit production occurs.

Clandestine laboratories have been built in suburban homes, garages, apartments, mobile trailers, urban dwellings, industrial areas, and even in specially designed underground vaults. Although an increasing number of these laboratories are confiscated in urban and suburban neighborhoods, the majority are seized in rural sections throughout the country. Because of the chemical odors and toxic wastes associated with the manufacturing process, isolation is often the best defense against detection. Therefore, operators commonly establish their laboratories in sparsely populated areas as a way to conceal their activities while minimizing their risk of discovery. Their operations are typically larger and more sophisticated than laboratories operating in more densely populated communities.

Clandestine laboratory operators are commonly referred to as cooks. Their knowledge of chemistry is often rudimentary at best. Typically, they have learned to manufacture methamphetamine from underground publications, through the observation of other illicit manufacturers, or during incarceration. They are often well armed and their laboratories are occasionally equipped with devices to secure the perimeters of the production site, some designed to maim or even kill those, such as law enforcement personnel, who violate the security of the premises. Numerous weapons, including explosives, are routinely confiscated in conjunction with clandestine laboratory seizures.

Public safety and environmental concerns are of little importance to these illicit drug manufacturers. Their laboratories have caused explosions, fires, toxic fumes, and irreparable damage to human health and to the environment. Every year, a number of laboratories experience fires or explosions, which leads to their discovery. Furthermore, because some of the chemicals utilized in the manufacturing process can be absorbed through the skin and lungs, contact with or simply breathing the fumes can cause fainting, sickness, severe damage to vital organs and the central nervous system, and even death. These laboratories are, therefore, a major hazard to anyone who may come in contact with them. Additionally, operators often accumulate waste chemicals during the synthesis of clandestine drugs. They usually dispose of these and other hazardous chemical wastes by unsafe and illegal methods, often dumping them on the ground or in nearby streams and lakes, pouring them into local sewage systems or septic tanks, or burying them underground.

The amount of waste material coming from a clandestine laboratory may weigh from a few pounds to several tons, depending on the size of the laboratory and its manufacturing capabilities. In 1994 alone, it is estimated that the DEA expended approximately $1.9 million for hazardous waste cleanup and disposal. DEA's cleanup program involves only removal of gross contamination of the site by a qualified hazardous waste disposal firm. Gross contamination includes such materials as chemical containers, contaminated apparatus, and other waste material. DEA does not become involved in any phase of remediation of the property (i.e., removal of septic systems used for disposal, removal of contaminated soil, or decontamination of property or dwellings to make them suitable for rehabitation).

Although the illicit manufacture of methamphetamine has traditionally been associated with outlaw motorcycle gangs, independent entrepreneurs and Hispanic polydrug trafficking organizations currently manufacture and distribute the drug. Outlaw motorcycle gangs continue to play a role in the distribution of methamphetamine and influence production in certain areas. They typically insulate themselves by financing manufacturing operations rather than becoming directly involved in drug production.

However, the most noteworthy trend is currently taking place in California, where Mexican traffickers dominate the large-scale production and distribution of methamphetamine. The most significant aspect distinguishing Mexican organizations from traditional traffickers is the large volume of methamphetamine they produce. Of further significance are their organized efforts to obtain, smuggle, and broker substantial quantities of chemicals used in the manufacture of the drug. The involvement of these polydrug-trafficking organizations is altering traditional patterns of chemical acquisition and methamphetamine production in California and adjoining States. They have replaced numerous mom-and-pop type operations and also may be rapidly replacing other traditional wholesale suppliers.

Mexican violators are involved in both the purchase or brokering and distribution of chemicals as well as the operation of methamphetamine laboratories. Brokers smuggle chemicals from Mexico and, to a lesser extent, Canada because there are no laws restricting the purchase of many of the chemicals that are regulated in the United States. They also employ runners to purchase chemicals, glassware, and equipment from chemical supply firms operating in California and surrounding States. The chemicals are then resold to clandestine laboratory operators.

A degree of cooperation exists among many Mexican manufacturing organizations because links between them already have been established through their long-standing cocaine, heroin, and marijuana connections. They assist each other in obtaining chemicals and glassware and it is not uncommon for one cook to manufacture for a number of different groups. In the future, these organizations may be able to institutionalize methamphetamine production and trafficking, not only making it more organized and efficient but also utilizing their transportation networks for nationwide distribution. The DEA, therefore, considers the involvement of these polydrug-trafficking organizations to be the most significant development and potentially the greatest challenge to law enforcement concerning dangerous drugs.

METHCATHINONE

A clandestinely manufactured synthetic compound with an abuse potential equivalent to methamphetamine, known as methcathinone or "cat" on the street, is increasingly available in parts of the United States, particularly the midwest. Methcathinone, a potent and easily manufactured stimulant, is distributed as a white to off-white, chunky, powdered material. Exhibits seized thus far have been uncut, with purity levels greater than 90 percent. It is sold usually in 1/4 gram, 1 gram, 1/8 ounce, or ounce quantities. In 1994, the price for methcathinone ranged from $80 to $100 per gram and $1,000 to $1,200 per ounce in DEA's Chicago and Detroit divisions. The most common route of administration is by nasal inhalation in doses ranging from 1/16 to 1/4 of a gram.

Clandestine laboratories producing methcathinone were first encountered in 1991 when five such sites were seized in the Upper Peninsula of Michigan, a remote area of close-knit communities. However, since 1991, methcathinone laboratories have operated throughout Michigan and in several other areas in the United States. In 1994, 20 methcathinone laboratories were seized by DEA's Chicago, Dallas, Detroit, St. Louis, and Washington, DC Field Divisions. This is in comparison to 22 seized in 1993 and 6 in 1992. Almost half the production sites seized in 1994 were located in Indiana, often in rural areas.

Generally, methcathinone laboratories are smaller than those normally encountered for other dangerous drugs like methamphetamine. The majority of methcathinone laboratories seized to date were intended to produce small amounts for self-use or limited distribution. However, ease of production and potency of effects may enhance the potential for further proliferation of methcathinone laboratories and, thus, for increased availability and abuse of this substance throughout the United States.

CANNABIS

Marijuana is the most readily available and commonly used drug in the United States. Both the cannabis plant and delta-9 tetrahydrocannabinol (THC), the plant's psychoactive chemical, are Schedule I controlled substances under the Controlled Substances Act. Two additional controlled substances derived from the cannabis plant—hashish and hashish oil—are in limited demand in the United States and are not produced domestically to any significant degree.

The latest trend to emerge involving marijuana is the smoking of "blunts." Blunts are commercial cigars that are gutted and the tobacco is replaced by or mixed with marijuana. Blunts filled with a combination of marijuana and other drugs, primarily phencyclidine or cocaine, are reported in several cities. Blunts first appeared in Jamaican and West

Indian communities in New York and reportedly were derived from the Rastafarian preference for oversized marijuana joints called "spliffs." The smoking of blunts, once limited primarily to East Coast cities, including Atlanta, Miami, New York, and Philadelphia, is now widespread throughout the country.

Marijuana from Mexican sources, whether grown in-country or transhipped from other sources, supplies more than 50 percent of the foreign marijuana available in the United States. However, law enforcement reporting has indicated a continued increase in Colombian, Venezuelan, and possibly Jamaican marijuana shipments to the United States.

Most foreign marijuana is smuggled across the southwest border with Mexico. Mexican and Mexican-American polydrug traffickers control the wholesale transportation and distribution of marijuana, while retail distribution is not restricted to any ethnic group or organization.

Marijuana in amounts of less than 50 kilograms is smuggled by back-packers, alone or in groups. Larger amounts, frequently concealed in hidden compartments, are transported by commercial and private vehicles and even pack animals. Multihundred kilogram quantities are smuggled within legitimate cargo or hidden in compartments in larger commercial vehicles such as tractor trailers.

Domestic cultivation supplies approximately 25 percent of the marijuana available in the United States. Domestic growers most frequently plant cannabis in remote outdoor areas, often camouflaging it in surrounding vegetation. Large-scale cannabis plots are often located in forests, on public land, or among legitimate crops. In 1994, 53,588 outdoor cannabis plots were eradicated, including 4 million cultivated and 504 million wild (ditchweed) plants. (Average marijuana yield is estimated to be one pound per plant.) In 1994, the States of Alabama, Hawaii, Kentucky, Tennessee, and California accounted for approximately 60 percent of all outdoor cultivated cannabis eradicated in the United States.

The widely scattered pattern of planting cannabis outdoors generally has necessitated manual destruction. However, more States are exploring the possibility of using herbicidal spray programs targeting large-scale, wild or cultivated cannabis sites. The decision regarding cannabis eradication/suppression technique is made by the participating State, which has sole responsibility for its individual eradication program.

The trend toward indoor marijuana production continues in the United States. It has been spurred not only by ongoing, successful law enforcement efforts to curtail outdoor cultivation but also because indoor growing provides a controlled environment conducive to the production of valuable, high-potency sinsemilla plants.

The most significant development regarding marijuana trafficking is the overall rise in potencies (percent of THC by weight) for both commercial grade and sinsemilla marijuana. Commercial-grade potency has increased by more than 500 percent since 1974, from an average of 0.85 percent to an average of 4.30 percent in 1994. A similar increase was observed among sinsemilla samples. In 1977, potency averaged 3.20 percent; by 1991, average THC potency had increased to 10.53 percent, while in 1994 sinsemilla averaged 7.41 percent. The record level of THC potency was measured at 29.86 percent from a sample seized in 1993 in Copper Center, Alaska.

This rise in THC levels is the result of selective breeding and cloning of high-potency cannabis cultivars. Most prized is sinsemilla marijuana, the unpollinated flowering tops and buds of the female cannabis plant. Rates of vegetative growth and maturation are enhanced by special fertilizers, plant hormones, steroids, insecticides, and irrigation techniques.

Sinsemilla commonly is cultivated in indoor growing operations of all types and sizes. These operations allow growers to control the pollination of female plants and to influence rates of growth. Indoor cannabis cultivators frequently employ such advanced agronomic practices as hydroponics, automatic light and fertilizer metering, and the provision of an atmosphere enriched with carbon dioxide. As a result, they are able to produce marijuana with higher THC content and, consequently, to demand higher prices. Over 3,200 indoor cultivation operations were seized in 1994. The States seizing the most indoor growing operations during that year were California, Oregon, Washington, Florida, and Wisconsin.

Marijuana prices have risen to reflect higher THC potency, especially at the high end of the price range. Commercial-grade marijuana prices rose from $400 to $600 per pound 10 years ago to $285 to $4,000 per pound in 1994. Similarly, sinsemilla prices rose from $1,200 to $2,500 per pound 10 years ago to $900 to $9,500 per pound in 1994. The highest prices were reported in Hawaii.

CRACK COCAINE

Cocaine, the most powerful stimulant of natural origin, is extracted from the leaves of the coca plant, which has been grown in the Andean highlands since prehistoric times. In the United States, cocaine normally is distributed as a powder (a hydrochloride salt) or in its base form, called "crack." Crack is produced from cocaine powder using a cheap, safe, and efficient conversion process. This process transforms cocaine from a powder, which is either inhaled or injected by the user, into a smokeable material.

Crack is smoked either in a pipe or in tobacco or marijuana cigarettes. When crack is smoked, the psychoactive effects of cocaine are absorbed by the lungs and are immersed into the bloodstream almost instantaneously. Once in the blood, the drug is carried directly to the brain, crossing the blood-brain barrier in as little as 5 or 6 seconds. The result is a very quick and extremely intense euphoric state or high that lasts from 10 to 20 minutes, depending on the amount and purity of the crack smoked. However, the euphoric state is followed almost immediately by depression or dysphoria, called a crash, and a very strong desire to repeat the sensation by smoking more crack, leading in many cases to severe addiction.

Crack first became available in the United States during 1981 in Houston, Los Angeles, Miami, and San Diego. However, it was not until late 1985 and early 1986 that crack became widely available in these and many other cities. Since then, this highly addictive drug has surfaced in almost every city and many small towns in the United States.

Initially, many freelance individuals and small groups of retailers were responsible for crack distribution, forming a type of cottage industry. Soon, the allure of high profits gave rise to large distribution organizations that operated production-line crack factories. However, successful law enforcement disruption and prosecution, combined with the problems inherent in large-scale crack packaging operations, forced these manufacturing and distribution organizations to scale down. As a result, crack currently is distributed by numerous low- to mid-level distribution groups or individual sellers, similar in structure to the crack market in its early stages during the 1980s. Nevertheless, some significant distribution networks under the control of criminal gangs still function at the wholesale level.

The primary effect crack distribution has had upon the drug marketplace is the virtual institutionalization of illegal drug sales. Before the onset of the crack epidemic, drug retailers and users often faced shortages or difficulties in finding reliable sources of illegal drug supplies. Today, a plentiful supply of crack is sold by an inexhaustible army of street sellers under the direction of professional distribution organizations.

A combination of factors, including saturated markets, low prices, violent competition, and effective police pressure in major urban areas, has forced some crack distribution organizations to develop new markets. Consequently, these organizations have expanded to smaller towns and rural areas across the Nation, creating many problems for local law enforcement officials and civil authorities. The larger and more advanced trafficking groups are crisscrossing the nation in an effort to find new markets.

The major crack trafficking groups operating in the United States include Jamaican "posses," street gangs like the Crips and the Bloods, and groups of Dominican and Haitian traffickers. Jamaican traffickers are moving westward from their major hubs of New York City and Miami. One area witnessing increased Jamaican posse activity is northern Florida. Here, posse members search for thriving crack markets in rural areas that are run by local gangs, then take over the operation by force.

Crips and Bloods street gangs are moving eastward from the Los Angeles area to many small towns and rural areas across the United States, particularly the southeast. For example, Shreveport, Louisiana, has evolved into an important source city for crack in the rural areas of northern Louisiana and surrounding States.

The methods employed by these street gangs can be summarized as follows. A lower-level gang member from Los Angeles will move to an area with family, friends, or other local contacts. The target area most likely will have a substantial minority population that has been spared from the deleterious effects of crack distribution and abuse. Typically, the gang member will rent two or three rooms in a motel for a few days. One room will serve as a stash room and the others will be used for retail crack sales. As a crack market develops, the distributor will approach addicts and welfare mothers and offer them $100 or more to use their houses or apartments as crack sales or stash houses. The distributor will recruit other locals, including juveniles, as sellers, runners, or lookouts. Using this method, a lower-level gang member, whose prospects in Los Angeles are limited, can become the leader of a crack distribution group in another town.

The national price for a rock or vial of crack ranges from as low as $2 to as high as $75, but generally sells for $10 to $50, depending upon the size, normally 1/10 to 1/2 gram. Gram prices range from $45 to $150. Ounce quantities can be purchased for $475 to $2,500. When available in kilogram quantities, crack prices are comparable to those for kilogram quantities of cocaine hydrochloride (HCl), ranging from $17,000 to $35,000.

Analysis of crack samples by DEA laboratories during the mid to late 1980s revealed that retail purity was consistently high, averaging 80-plus percent. Although current retail purity remains approximately at that level, sellers in some areas of the country are selling poor quality crack. Adulterants increasingly are being added to the cocaine HCl prior to its conversion to crack to increase the weight or size of the final product.

CONCLUSION

Rural America increasingly is playing a significant role in the manufacture, trafficking, and abuse of illicit drugs. Growing competition and effective law enforcement efforts in large cities have forced drug manufacturers to relocate production facilities to remote areas to evade detection and to exploit potential consumer pools. Marijuana growers and manufacturers of methamphetamine and methcathinone are taking advantage of the isolation offered by rural environments to produce illegal drugs. In addition, crack sellers from major cities are targeting rural areas, searching for new customers and less hostile distribution environments. Until recently, rural areas have been spared much of the trauma experienced in major U.S. population centers and often they are ill equipped to manage the rapid increase of drug distribution and abuse and the resulting health and social problems.

NOTE

This chapter was amended in May 1995 to include the most recent changes in drug prices and laboratory seizure data.

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Risk and Protective Factors for Drug Use Among Rural American Youth

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INTRODUCTION

Rural and urban America differ in many ways, but drug use is a common phenomenon throughout the country. There may be differences in the extent, social contexts, and consequences of use, but, in general, drugs are as much a problem in rural America as they are in cities. Commonality between urban and rural areas also appears when the personal and social risk factors for drug use are examined: Many of the same characteristics relate to drug use among both urban or rural adolescents.

This chapter illustrates the links between various personal and social risk factors and drug use among youth living in rural communities. Data were collected through self-report surveys administered to 7th and 8th grade and 11th and 12th grade rural students in nine rural communities in nine States with populations of less than 100,000; none were suburban or bedroom communities. The populations of these communities ranged from 451 to 18,400. Surveys included a drug use questionnaire, The American Drug and Alcohol Survey™, and the Prevention Planning Survey™, a questionnaire that includes short scales measuring a wide range of characteristics that have been linked to drug use among adolescents. Data from the survey sites were combined into a total sample for the figures in this report.

METHOD

Questionnaires were administered anonymously in schools. Students could elect to not complete the surveys; however, 98.4 percent of all students attending school on that day did complete them. The drug use survey includes 40 checks for internal consistency and exaggeration. Questionnaires positive on three or more of these checks were rejected before analyses; in this case, 3 percent of the students were eliminated. The results reported here are for 1,656 rural 7th and 8th grade students and for 1,205 rural 11th and 12th grade students. Ethnic proportions were: 77.2 percent white, 5.2 percent African-American, 2.3 percent Native American, 3.1 percent Hispanic, and 12.2 percent other. Of the total, 52.4 percent were female.

The figures in this chapter contrast proportions of rural youth falling into three drug use classifications: high, moderate, and no drug involvement. Students were assigned to one group based on current level and type of drug use. Current drug involvement was assessed by classifying each survey respondent into one of 34 drug use types ranging from "dependent or predependent" to "never tried alcohol or drugs" (Oetting and Beauvais 1983). These drug use types were ordered in a hierarchy of increasing severity and risk to the individual, providing a score for overall drug involvement ranging from 1 to 34. Construct validity of this measure has been demonstrated in a number of studies that showed the score for overall drug involvement to be consistently related to those psychological and social characteristics that are known risk factors for drug use (Oetting and Beauvais 1987*a*, 1987*b*; Swaim et al. 1989, 1993). Adjacent drug use types share some characteristics of drug use and can be combined into larger types. In the current study, the drug involvement score was collapsed to assign individuals to one of three groups.

The high drug involvement group included those who were using multiple drugs, or were using one drug several times a week, and/or were getting drunk virtually every weekend and often during the week as well. Those who were classified as being highly drug involved made up 5.3 percent of the rural 7th to 8th graders and 13.6 percent of the 11th to 12th graders.

The moderate drug involvement group included those who did not meet the criteria for heavy involvement but were using drugs at least once a month or were getting drunk at least once a month. Most of the youth in this moderate involvement group also rated themselves as drug users, indicating that their use was likely to continue at that level or increase. Those who were classified as being moderately drug involved comprised 17.1 percent of 7th to 8th and 18.6 percent of 11th to 12th graders.

The low or no involvement group consisted of those who were not currently using any drug and had not been drunk in the last 30 days. They had low current involvement with drugs although they may have experimented with drugs, or gotten drunk, in the past and may have used some alcohol in the last 30 days. Those classified as having no use comprised 77.6 percent of 7th to 8th and 67.8 percent of 11th to 12th graders.

The Prevention Planning Survey™ includes items and short scales that assess a variety of personal and social characteristics. Some risk factors are assessed with single items (for example, "Have you ever flunked a year in school?"). Other risk factors are assessed with self-report scales ranging from 2 to 11 items. Table 1 lists the risk and protective factors included in the survey with the number of items used for each measure and internal consistency reliabilities of scales. The items are short and simply worded so that students with weak reading and comprehension skills can complete the measures reasonably well (i.e., "I like my teachers" or "Does your family care about you?"). Responses for most items are short Likert scales such as "a lot, some, not much, not at all." To identify individuals at risk, a priori cutting scores have been established for all risk factors. Questions about behaviors assess lifetime prevalence (i.e., "Have you ever flunked a year in school?" or "Have you ever been arrested?") and are answered "yes" or "no."

PEER CLUSTER THEORY AND RISK FACTORS FOR ADOLESCENT DRUG USE

Peer cluster theory (Oetting and Beauvais 1986*a*, 1986*b*) was created to help explain the strong relationship typically found between drug use and the drug involvement of peers. The basic premise is that adolescent drug use is almost entirely a group activity taking place in the social context of peer clusters. Peer clusters consist of best friends, couples, or a small group of close friends who share attitudes and drugs and establish group norms for drug use. Youth who are at risk tend to self-select into peer clusters (i.e., adolescents with poor grades and who dislike school often form peer clusters that have a high potential for deviance). The potency of peer influence on drug use is not a new concept, but peer influence is a broad term. Peer cluster theory differs from peer influence in that it contends that small identifiable peer clusters determine where, when, and how drugs are used.

In addition to focusing on peer associations, peer cluster theory also emphasizes the importance of the psychological and social characteristics that underlie drug use. These characteristics set the stage for peer clusters

TABLE 1. *Risk and protective factor variables.*

N = 12,647, grades 6 to 12	No. of items	Alpha reliability
Peer encouragement		
Getting drunk	single item	
Using marijuana	single item	
Using inhalants	single item	
Using other drugs	3	0.93
Peer sanctions		
Getting drunk	single item	
Using marijuana	single item	
Using inhalants	single item	
Using other drugs	3	0.95
School adjustment		
General school adjustment	6	0.84
Failed a year	single item	
Kicked out or suspended	single item	
Ditched school	single item	
Peer school adjustment		
General school adjustment	5	0.85
Failed a year	single item	
Kicked out or suspended	single item	
Ditched school	single item	
Formal activities	single items	
Family support and conflict		
Broken family	non scalar	
Family cares	3	0.81
Family fights/argues	2	0.79
Beaten by parents	single item	
Beaten up by siblings	single item	
Family sanctions		
Getting drunk	2	0.81
Using marijuana	2	0.73
Using inhalants	2	0.80
Using other drugs	2	0.69
Family communication about drug dangers		
Getting drunk	single item	
Using marijuana	single item	
Using inhalants	single item	
Using other drugs	single item	
Family support of the school		
Family involvement in school activities	3	0.71
Family support of school goals	4	0.87
Depression	6	0.91
Self-esteem	11	0.87
Violence		
Beaten up someone	single item	
Robbed someone	single item	
Taken a gun to school	single item	
Scared someone with a weapon	single item	
Hurt someone with a weapon	single item	
Victimization		
Beaten up by a nonfamily member	single item	
Been robbed	single item	
Hurt with a weapon	single item	
Raped or sexually assaulted	single item	

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to emerge and evolve either toward or away from drug use. For example, family and school are primary socialization forces that influence youths' attitudes and behaviors and contribute to the probability that youth will or will not become involved in drug using peer clusters. Following is a brief summary of peer cluster theory; for details, see Oetting (1992) and Oetting and Beauvais (1987*a*, 1987*b*).

Strong connections between child and family usually communicate prosocial norms and behaviors and provide a solid foundation for doing well in school and building friendships with other young people who share positive norms and ideals. Adolescents whose families communicate antidrug values and attitudes are likely to develop friendships with other healthy youth. The resulting peer clusters are likely to share prosocial and antidrug attitudes and beliefs. Similarly, when young people do well in school and like school, and when the teachers and the school environment communicate positive values, those youth are also likely to form peer clusters that have a positive influence. However, when there are weak bonds with the family and/or school, when the family is dysfunctional, or when antisocial or prodrug norms are communicated, young people are more likely to be attracted to and associate with other problem youth. When this occurs, the chances are greatly increased that the resulting peer clusters will become involved with drugs.

Factors beyond the family and school that can influence drug use include poverty, a bad neighborhood, and the media. Although these factors relate to drug use, peer cluster theory suggests that they influence drug use indirectly through one or more of the primary socialization agents. Poverty, for instance, has a strong influence because it can damage the stability of the family, hurting the family's ability to communicate prosocial norms. A bad neighborhood may influence drug use by making it hard to associate with positive peer clusters and easy to form friendships with drug users. Poverty and a disadvantaged environment can also mean poorly funded, inadequate schools with high dropout rates. Family, peer, and school problems can have major effects on youth by isolating them from prosocial attitudes and norms and by teaching antisocial, prodrug attitudes and behaviors.

Young people spend a lot of time watching television and listening to the radio and recorded music. Peer cluster theory suggests that media influence is strongly mediated by family and peers. What adolescents watch and listen to and their perceptions of what it means are largely determined by their friends and family.

Religion, a positive force in the lives of many rural youth, also affects drug use, primarily through family and peer associations. Adults often find their own religious paths, independent of those of their primary family, but religious adolescents almost always come from religious families. The child exposed to religious values is likely to adopt other prosocial and antidrug norms from his or her family.

The following sections discuss the primary socialization agents, beginning with peers because of their critical importance in drug use, then covering school and family. The relationships between these characteristics and drug use among rural youth are presented. An adolescent's personal characteristics can also create potential problems because they limit the ability to bond with parents or develop good school adjustment or because they increase the probability of bonding with deviant peers. Therefore, some personal characteristics of young people that are related to drug use are discussed.

PEER CLUSTERS AND DRUG USE

It has been long recognized that peers play a critical role in deviant behavior. Sutherland's (1947) differential association theory proposed that interactions within primary interpersonal groups can lead to the learning of deviant attitudes and behaviors. Differential association means that when the strength of deviant attitudes outweighs the strength of antideviant attitudes, the outcome is likely to be deviant behaviors, including substance use (Sutherland and Cressey 1970). In 1953, Becker found that adolescents who used marijuana had friends that used marijuana. Over the last 40 years, research has continued to consistently demonstrate the critical importance of peer drug use to adolescent drug use (Adler and Lotecka 1973; Battistich and Zucker 1980; Beauvais et al. 1982; Brook et al. 1980, 1982, 1983; Huba et al. 1979; Kandel 1985; KaVari 1993; Lawrence and Velleman 1974; Lopez et al. 1989; Oetting and Beauvais 1987*a*, 1987*b*, 1989; Oetting et al. 1989; Oetting and Goldstein 1979; Tolone and Dermott 1975; Wechsler and Thum 1973). The premise of the peer cluster theory, that adolescent drug use is a group activity of peer clusters that develop shared norms about drug use, is consistent with these earlier findings.

Drug Use of Friends

Dinges and Oetting (1993) found that 90 percent of adolescents who use drugs have friends who use those same drugs. Further, the more drugs adolescents use, the more likely they are to have friends who use not only those drugs but other drugs as well. For example, whereas 35 percent of those who used only marijuana had friends who used downers, 70 percent of those who used uppers, cocaine, and marijuana but not downers had friends who used downers. These results suggest that as the drug use problem increases for an individual the chances that it will get even worse grow larger.

Thus, one of the biggest risk factors for later, more serious drug use is existing drug use. The typical sequence of drug use starts with tobacco, beer, and wine, moves to marijuana, and then escalates to other drugs (Dupont 1984; Kandel et al. 1978; Mills and Noyes 1984; O'Donnell and Clayton 1982).

Peer Encouragement To Use Drugs

Drug-using youth not only have drug-using friends, but those friends also encourage drug use. Figure 1 shows the percentage of youth in each drug involvement classification who have friends who suggest using a particular substance either "some" or "a lot." Similar patterns appear among rural 7th to 8th grade and 11th to 12th grade youth; users are far more likely to be asked to get drunk and to use marijuana than nonusers, but among 7th to 8th grade youth, users are also more likely to be asked to use inhalants or other drugs.

Compared to 7th to 8th grade users, fewer 11th to 12th grade students indicate that they are asked to use other drugs. It seems unlikely that there is really less social influence to use among older drug users, particularly when their actual drug use rates are higher. The difference may occur because older users interpret the question in a slightly different way. Some older adolescents may be insisting that they are using of their own volition; they may say that nobody actually asks them to use drugs.

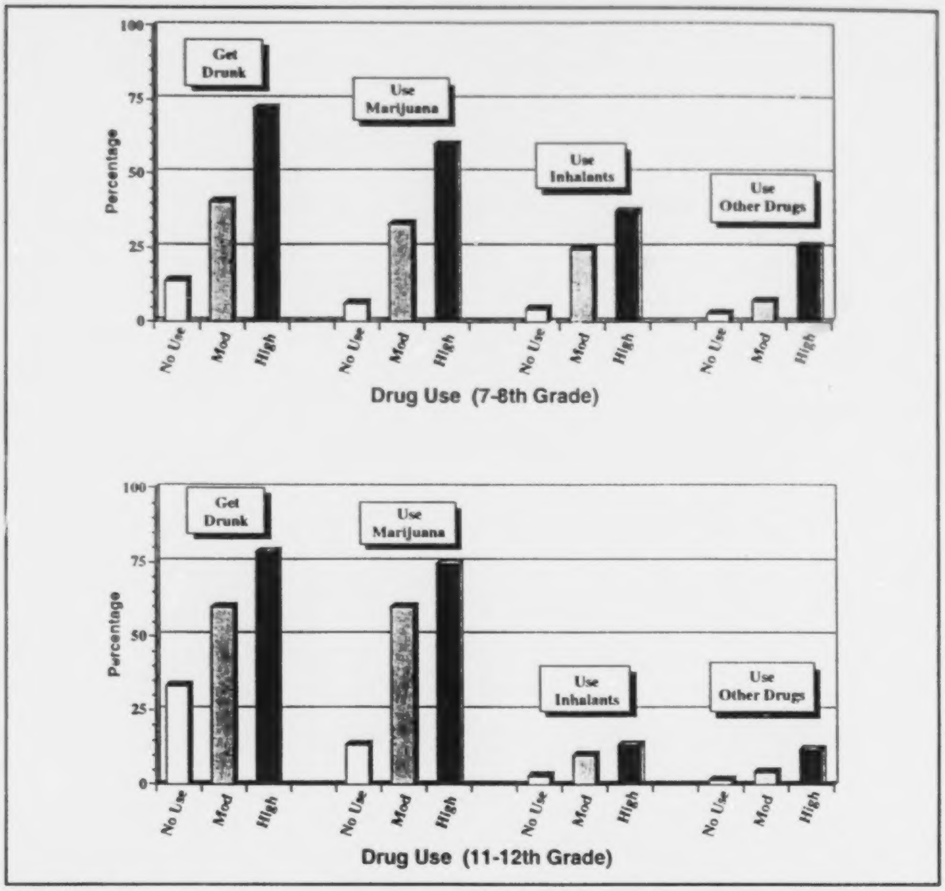

FIGURE 1. *Peer encouragement and drug use: "Friends ask you to . . . ."*

This has been a frequent response in the authors' interviews with older drug users. They argue against any implication that they are subject to peer pressure and claim that drug use is their own decision. It is also possible that older adolescents involved in a drug-using lifestyle simply assume drug use will take place as part of their activities, so they are not really asked to use.

Adolescents are under much more pressure to conform than they are willing to admit, but this is primarily because they do not see it as pressure. One difference between peer cluster theory and peer pressure theories is related to this principle. The image many people have when they think of peer pressure is either of the pusher who is trying to get a youth to buy drugs or of a chronic drug user suggesting drug use to a nonusing youth. Antidrug use ads frequently show the pusher suggesting drug use or suggesting that a child sell drugs to friends. This public

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image is usually wrong. Most adolescents are part of small peer clusters in which each member of the group is a participant in the decisions about what the group will wear, how they will talk, how they will wear their hair, what they believe, and how they will use or not use drugs. From the outside of the group, the fact that they all are dressing, looking, and talking alike might look like they are responding to peer pressure. In fact, there is a very strong peer social influence operating that encourages conformance to peer cluster norms. From the inside of the peer cluster, however, it does not feel like pressure. It feels more like mutual agreement; even though there is a great need to conform, it does not seem to the adolescent that anyone is suggesting anything or applying pressure to behave in a particular way.

Peer Sanctions Against Using Drugs

Another aspect of peer influence is whether a youth's friends would try to stop drug use. Figure 2 shows that there are also large differences between drug using and nonusing youth in their perceptions of whether a friend would try to stop them from using drugs. Nondrug users are much more likely to have friends who would stop them from using; for all drugs and grade levels, around 80 percent reported that they had friends who would try to stop use of drugs either "some" or "a lot." In contrast, less than one-third of heavy users reported having friends who would try to stop marijuana use.

As might be expected, peer sanctions against getting drunk are not as strong as those against using other drugs. There are large differences between drug users and nonusers, but only a little more than half of the nonusers and about a fourth of the drug users had friends who would try to stop them from getting drunk. Getting drunk tends to be an expected and relatively approved behavior for many rural youth.

Dinges and Oetting (1993) found that 90 percent of drug users have friends who are using drugs. It is interesting that this figure shows that about half of these drug users also have friends who would try to stop them from using drugs. This may occur because many adolescents are members of more than one peer cluster; they have some friends who use drugs but others who would try to stop them from using. As an example, one young woman the authors interviewed said, "If my boyfriend knew that I was using drugs with my girlfriends, he would kill me!"

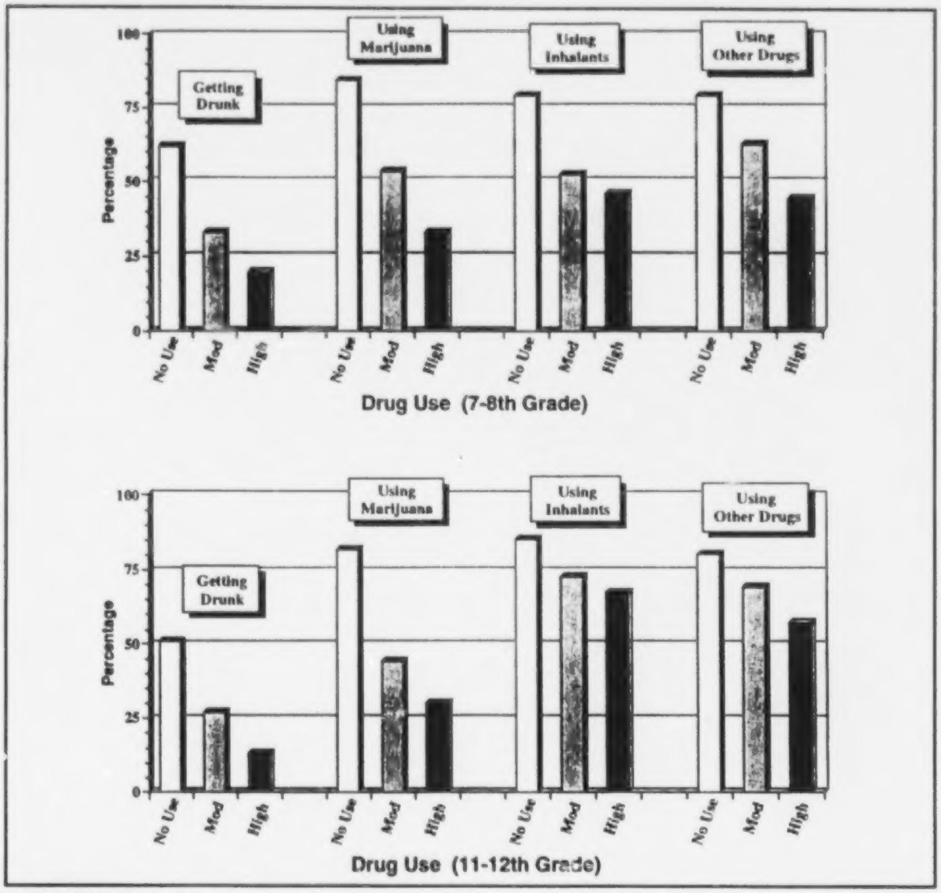

FIGURE 2. *Peer sanctions and drug use: "Friends would try to stop you from . . . ."*

Interestingly, peer sanctions against alcohol and marijuana use get weaker as adolescents get older, but there is a noticeable increase in peer sanctions against using inhalants or other drugs from the 7th to 8th grades to the 11th to 12th grades.

Edwards (this volume) has noted the variability in drug use across rural communities that is usually accompanied by variability in peer drug associations. In one rural community with very low drug use, only 5 percent of seventh to eighth graders were categorized as at risk because of peer encouragement to use marijuana. In another rural community with high drug use, 32 percent were at risk because of a high level of encouragement to use marijuana.

SCHOOL PROBLEMS AND DRUG USE

Beginning with Nylander (1962), in almost every study where school adjustment and drug use have been assessed, problems in school adjustment have been found to relate to drug use. Studies published in the last decade include Altenkirch and Kindermann (1986), Bachrach and Sandler (1985), Carlini-Cotrim and Carlini (1988*a*, 1988*b*), Frank et al. (1988), Jacobs and Ghodse (1988), and Wingert and Fifield (1985). Dropouts also have higher rates of drug use (Annis and Watson 1975; Bruno and Doscher 1979; Chavez et al. 1989; Fagan and Pabon 1990; Johnston 1973; Kandel 1975, 1978; Mensch and Kandel 1988; Whitehead 1970; Winburn and Hays 1974). In general, these studies show that drug users have poorer grades, are more likely to dislike school, have discipline problems in school, and more likely to drop out.

School Adjustment and Drug Use

Figure 3 shows the proportion of youth in each drug use classification with general school adjustment problems (poor grades or dislike of school). Drug-involved youth are much more likely to experience these problems. Moreover, they are more likely to have ditched school, to have failed a year, or to have been kicked out or suspended.

However, the relationship between drug use and risk factors can change with age. The differences in school adjustment between drug users and nonusers are much smaller for older students. One reason for this may be that, by their senior year, many adolescents who were having school adjustment problems and were using drugs have dropped out.

An age difference also appears with regard to ditching school. In the seventh to eighth grades, the drug users were much more likely to have ditched school. By the 12th grade, more than a third of all students surveyed had ditched school at least once. Thus, among younger students, ditching school is more indicative of risk than it is among older students.

While these relationships between school adjustment and drug use are strong, they are not perfect. There are many students who are doing poorly in school who are not using drugs, and many more nonusers than users in the seventh to eighth grades. Despite the strong relationship between school problems and drug use, there are more students who are having school problems and are not using drugs than students who are

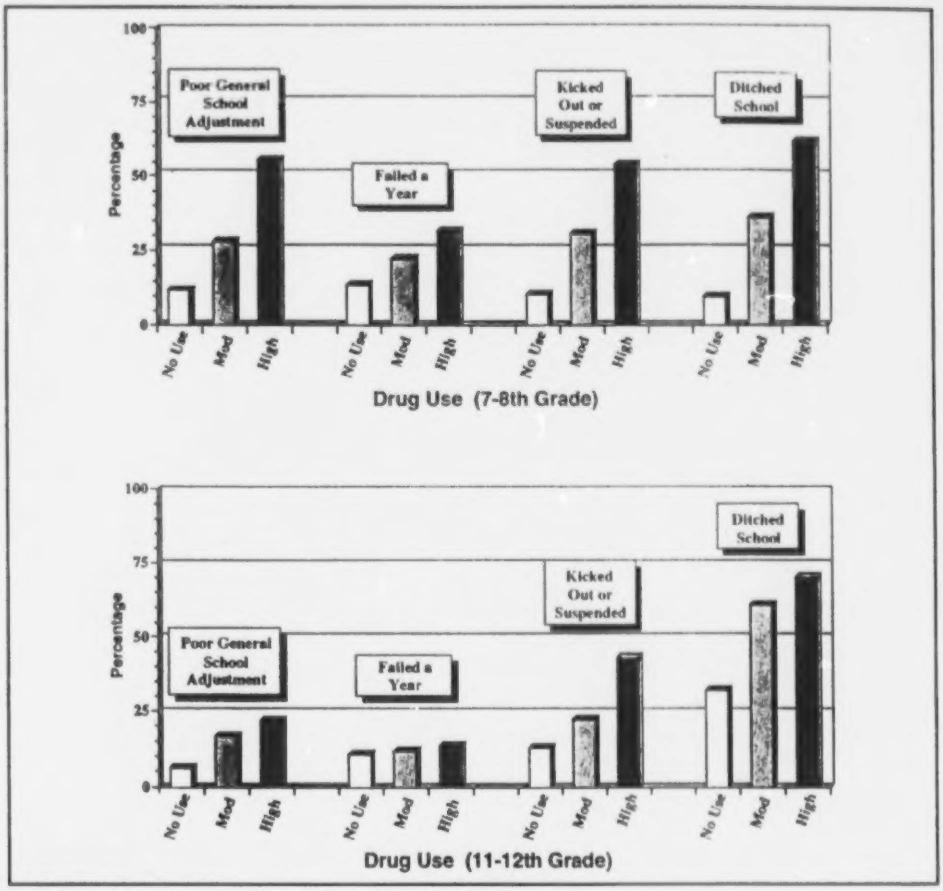

FIGURE 3. *School adjustment and drug use.*

having school problems and using drugs. This base rate issue needs to be kept in mind when considering risk factors; youth who have these problems are more at risk than if they did not have the problem, but possessing one or more risk factors does not mean that the student is using drugs.

School Adjustment of Peers

Poor school adjustment is probably related to drug use, in part because of its influence on peer clusters. Figure 4 shows this relationship. Drug-using youth were more likely than nonusers to report having friends who had one or more school adjustment problems.

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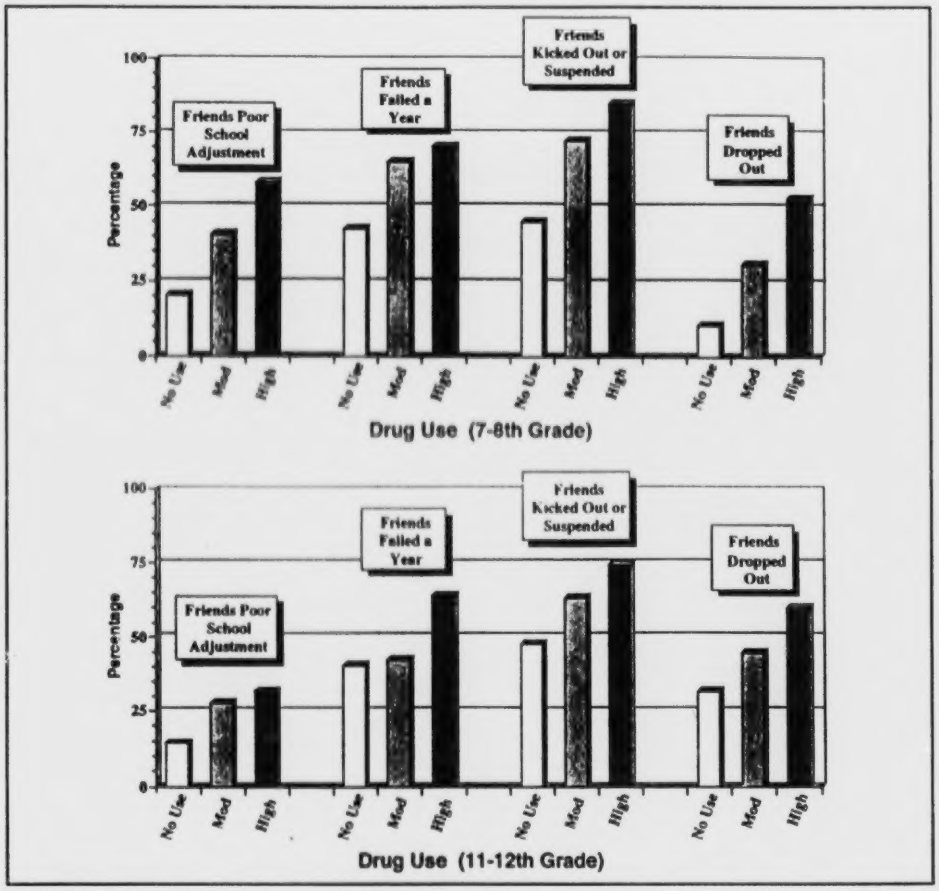

FIGURE 4. *Peer school adjustment and drug.*

However, many nonusing rural youth also had friends with school adjustment problems; almost half, for instance, indicated having friends who were dropouts. This situation occurs slightly more frequently in rural than in urban communities. For example, over 40 percent of rural youth in each classification had friends who had flunked a year; this figure was about 30 percent for urban youth. Because there are few young people in any age group in rural areas, and even though youth who are having school problems are more likely to associate with each other than with those who are doing well in school, the peer clusters in rural communities are likely to be slightly more mixed than those in urban environments where more choices are available.

Formal Activities and Drug Use

Schools and communities typically run programs that are not thought of as drug prevention programs. Nevertheless, these programs can help prevent drug use with, for example, school-supervised activities that occupy time during and outside of school hours: music, drama, student government, yearbook, scouts, 4H, Junior Achievement, and so forth. One reason these programs prevent use is that adolescent drug use usually occurs during informal gatherings of peers—at parties, in cars, and in other locations where peer clusters hang out together with no adult supervision. When there are opportunities for formal activities, at a minimum they provide adult supervision and reduce the amount of time peer clusters can get together in the informal situations in which drug use may take place. Moreover, formal activities provide opportunities for young people to interact with adult leaders and teachers in healthy settings. These adults can be a powerful source of prosocial attitudes and beliefs and of negative attitudes toward drugs. Finally, they offer youth the opportunity to develop talents and skills and increase feelings of self-worth and achievement.

Figure 5 shows the involvement of rural students in school and community activities. Drug users were a little less likely to be involved in formal activities. Being in a church group seemed to provide the highest level of protection from drug use, probably because youth with higher religious identification self-select into activities that conform with church doctrine. Rural students who were not involved in any formal activities, in school or out, were somewhat more likely to use drugs. Twenty percent of these 11th to 12th grade rural students not involved with drugs avoided all formal activities, and 27 percent of the moderately drug involved engaged in no formal activities, whereas 37 percent of the highly drug involved participated in no formal activities. Young people who are not involved in activities may be less successful generally and may find each other, forming peer clusters with a potential for deviance. Children with failing grades may even be prevented by school rules from participating in school activities, giving them even more time to find each other and form peer clusters. Participating in activities does not mean that a student is not drug involved; formal activities help reduce opportunities for drug use, but students who want to use drugs will find the time and place to use them.

Increasing the amount of supervised activity is difficult in many rural areas. Lack of transportation prevents younger adolescents from

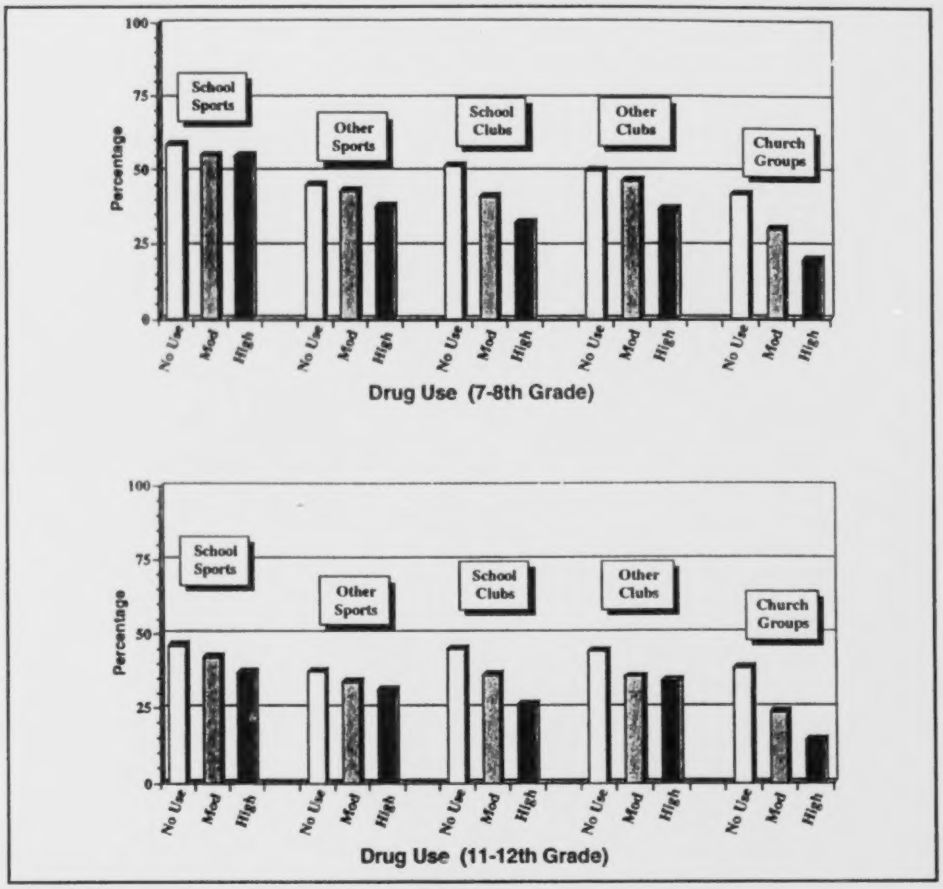

FIGURE 5. *Formal activities and drug use.*

attending meetings, whereas transportation poses a different problem for older rural youth. Rural 11th to 12th graders are much more likely than urban youth to have their own means of transportation, which increases opportunities for informal gatherings. Moreover, the car or truck provides a place where friends can use drugs without being observed.

The high availability of transportation among older rural youth is a major factor in adolescent drinking and driving. Edwards (1995) points out that 40 percent of rural seniors report using alcohol while driving around, in contrast to 25 percent of urban seniors. The danger of this activity is exacerbated by the unlit and poorly marked conditions of many country roads.

FAMILY PROBLEMS AND DRUG USE

Beginning with Massengale and colleagues (1963), research studies have consistently found a relationship between family problems and drug use. Studies published in the past decade continue to confirm this relationship (Bachrach and Sandler 1985; Carlini-Cotrim and Carlini 1988*a*, 1988*b*; Frank et al. 1988; Jacobs and Ghodse 1988; Peterson et al. 1994). For the very young child, the family is the primary source of emotional support and socialization. During adolescence, the influence of school and peers increases, but the family remains an important source for support, encouragement, and guidance. Problematic family relationships can undermine the family's ability to help the child develop positive attitudes and values. The studies previously cited have shown that being in an intact family and having good family relationships provide some protective influence in reducing the chances of drug use. Alternatively, family problems, including family drug use, family aggression and hostility, and criminal records, increase the chances of drug use. Only four studies failed to show differences between drug users and nonusers in family intactness (Carlini-Cotrim and Carlini 1988*a*; De Barona and Simpson 1984; Kaufman 1973; Oetting et al. 1988). In each of these studies, drug users and nonusers were from groups experiencing serious socioeconomic and social isolation problems. Perhaps family breakdown or despair was so severe that no differentiation was possible.

Family Stability, Family Support, and Family Conflict

Figure 6 shows the proportion of broken families (mother and/or father not in home) among rural adolescents. Drug users were somewhat more likely to have families that were not intact. About one-third of the nonusing rural adolescents came from broken families, whereas 50 to 60 percent of the users came from broken families. The relatively high rate of broken families among nonusers once again indicates that risk factors do not cause drug use; rather, they point at areas of vulnerability.

Although most rural students indicated that their families cared about them a great deal, figure 6 shows that highly drug-involved rural youth were less likely than other youth to report that their families cared about them "a lot." Familial support provides children with security, helps them adjust to school, and increases the chances that they will develop friendships with other youth who do not have problems.

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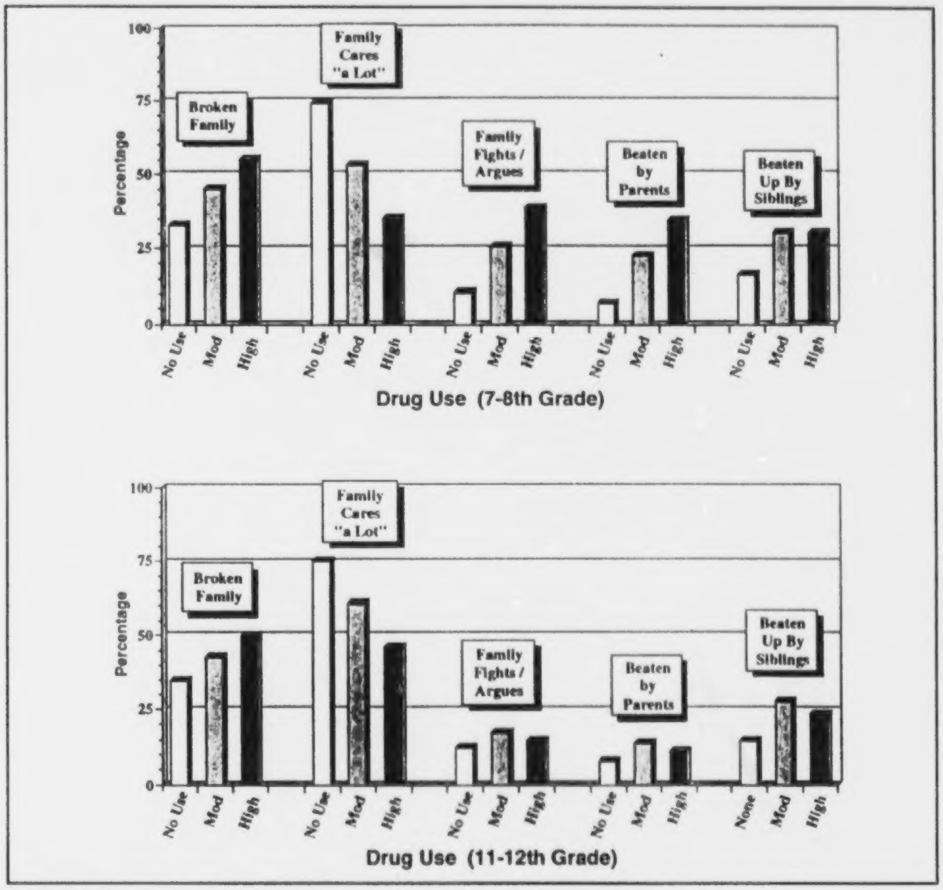

FIGURE 6. *Family support, family conflict, and drug use.*

Nearly all families have some fights and arguments, but when they occur too frequently, they disrupt family life, making it hard for the family to provide the child with emotional support. Drug-using seventh to eighth graders were much more likely than other youth to report high levels of family conflict. Older rural drug users were less likely to report that their families fought and/or argued "a lot," so family conflict was not as important a risk factor for older students. It is likely that the lower rate for older students reflects the high prevalence of school dropouts among drug users with serious family problems as well as the increased autonomy of older adolescents.

Family conflict can appear in other ways. Drug users were more likely than others to report being beaten by their parents, although by 11th to 12th grade, the difference was slight. Different students may interpret this item in different ways; one youth could define being beaten as a spanking for childish misbehavior, whereas another could define it as routine, severe beatings by an abusive parent. The fact that there is a relationship with drug use suggests that if a parent is using physical discipline to change behavior, he/she may change it in unexpected and unwanted ways.

Being beaten up by siblings was apparently more common than being beaten by parents. About 15 percent of nonusers indicated that this had happened to them. However, drug users were more likely to report being beaten up by their siblings. For some rural youth, this may be an indication of general family conflict; 41 percent of students who were beaten by parents had also been beaten by siblings, whereas 17 percent of those not beaten by parents had been beaten by siblings.

Family Sanctions Against Drugs and Family Communication About Drug Dangers

Figure 7 shows that most rural youth reported that their families were against the use of drugs. This sentiment was so widely held that the desired effect occurred only when the adolescent perceived the parents' views to be in the extreme against drug use. About 9 out of 10 nonusing rural students believed that their families felt very strongly about preventing the use of marijuana and other drugs, but only one-third of the highly involved drug users believed that their families would try to stop them from using marijuana.

It is somewhat surprising to find a lower level of family sanctions against the use of inhalants and other drugs in about one-third of the seventh to eighth grade heavy users. Perhaps these youngsters had such serious family problems that their responses did not indicate that their families approved of drug use; rather, their relationships with their families had broken down to the point that they believed their families did not care what they did.

As expected, family sanctions against getting drunk were much weaker than those for using drugs. Even among nonusing 11th to 12th graders, about a third believed their parents would not try "a lot" to stop them

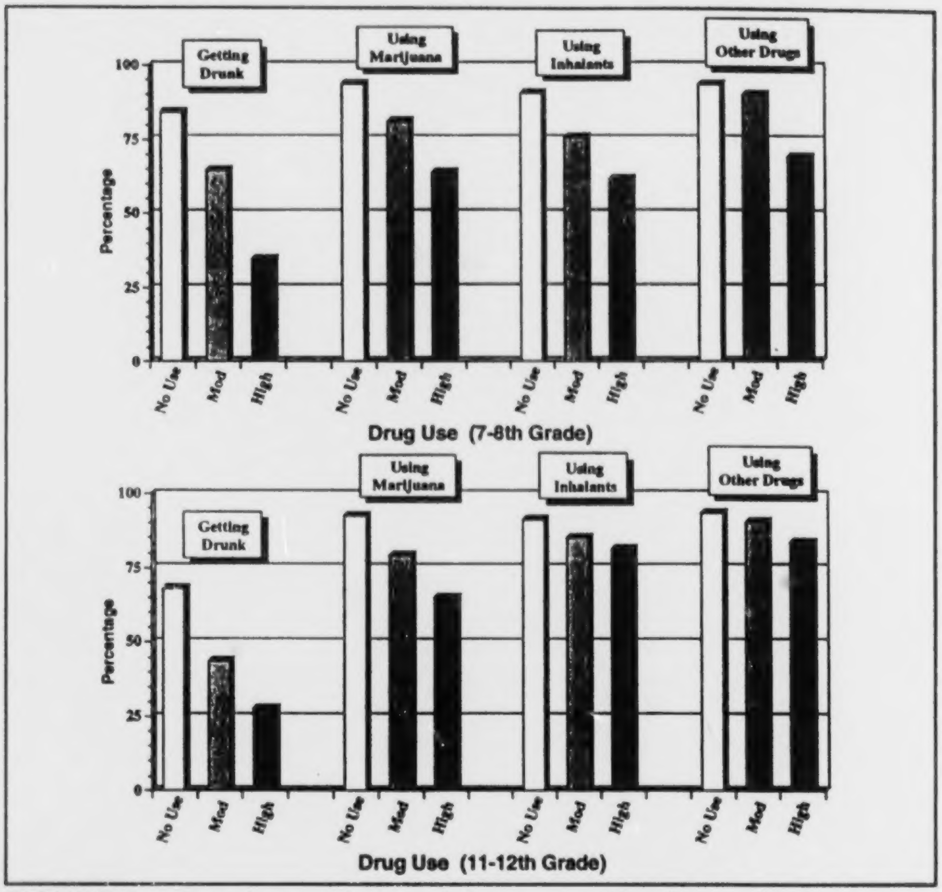

FIGURE 7. *Family sanctions and drug use: "Family would try to stop you from . . . ."*

from getting drunk. In contrast, among drug users, less than half believed their families would try "a lot" to stop them from getting drunk. Perceived family tolerance of alcohol use among older youth is not exclusive to rural areas; in fact, the authors' data suggest that there may be an even greater perception of family tolerance for getting drunk among urban teens.

Although most rural adolescents perceived their families to be strongly against drug use, many believed their families did not communicate with them about the dangers of drug use. A considerable number of rural adolescents reported that their families had not talked to them much about the dangers of drug use. Figure 8 shows that there were only small differences between classifications of drug use with regard to family

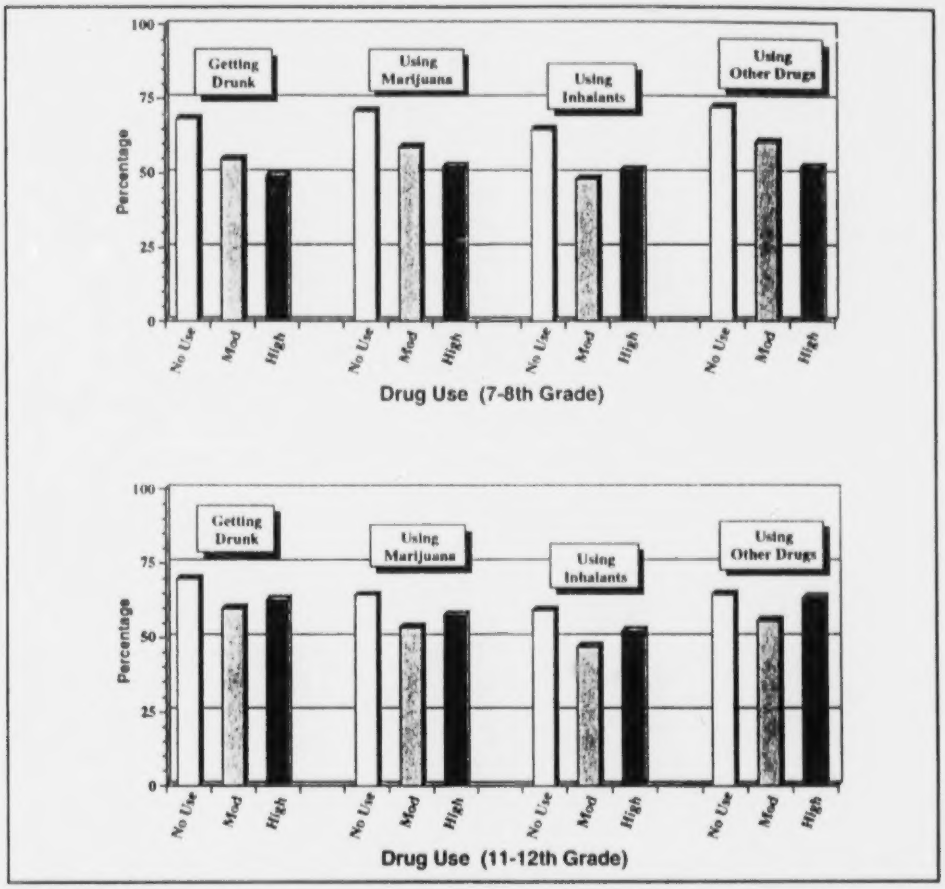

FIGURE 8. *Family communication about drug dangers: Family has talked about dangers "some" or "a lot."*

communication about drug dangers. However, nonusers were somewhat more likely than others to report that their family had talked about the dangers of drug use.

Family Support of the School

Family support does not stop with the home. Children are likely to do better in school when their families are supportive of and involved with the school, and encourage good school work. As previously shown, success in school makes it more likely that youth will associate with others who are successful and less likely that they will be in drug-using peer clusters. Figure 9 illustrates rural adolescents' beliefs about family involvement in school activities and support of school goals.

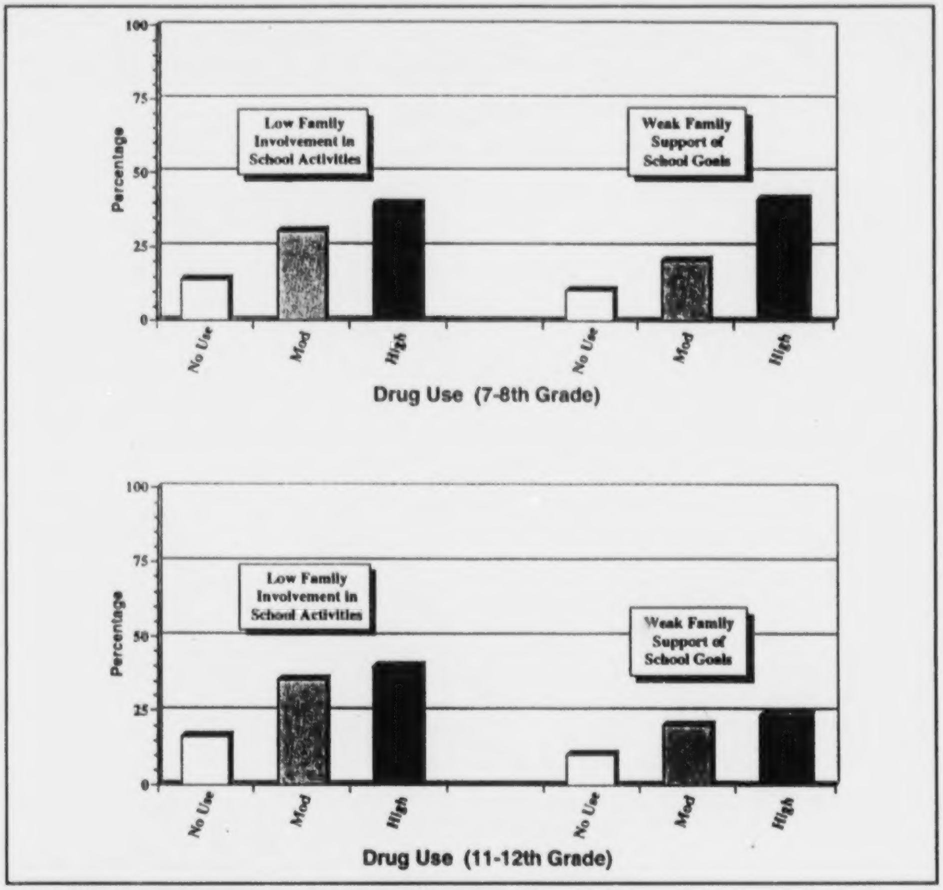

FIGURE 9. *Family support of the school and drug use.*

Youth who were involved with drugs were more likely to report that their families were minimally involved with the school. However, more than half of the drug users had families that knew what was going on in school, attended school events, and went to parent-teacher groups' meetings. Most rural families did support school goals; they would be concerned if their child skipped school, got bad grades, did not do homework, or quit school. However, drug-using youth more frequently reported that their parents did not support school goals "a lot."

PERSONAL CHARACTERISTICS

Some personal characteristics of very young children have been shown to be related to later drug use. Hawkins and colleagues (1986) reviewed the literature and noted that childhood conduct disorder, antisocial tendencies, frequent negative mood states, high-intensity emotional responsiveness, and inability to control emotions were evident among children who were involved with drugs when they were older. Studies have tended to confirm these general patterns: Later drug use has been found to relate to personal characteristics (particularly irritability, lack of impulse control, conduct problems, and aggressiveness) that would make it more difficult to build good relationships with the family and the school (August et al. 1983; Block 1971; Cloninger et al. 1988; Gomberg 1989; Pulkkinen 1983; Tarter 1988; Tarter et al. 1977, 1984; Werner 1986).

Why are these traits related to drug use and other problem behaviors? It is possible that they make it difficult for a child to build good relationships with parents, which makes it more difficult to learn prosocial attitudes, values, and behaviors through early parent-child interactions. During elementary school, children who showed a high need for independence and lack of conformity and males who were aggressive, particularly if they were shy, were more likely to use drugs later (Hawkins et al. 1986). These traits could make it more difficult for children to get along with teachers, adequately pay attention to lessons, and conform to classroom rules, all of which could lead to poor school adjustment. By the seventh grade, it is too late to measure early childhood characteristics directly, but early problems can influence traits related to later drug use. However, some problem behaviors disappear as the child develops; others change form or expression.

Drug Use, Depression, and Low Self-Esteem

There is considerable interest in adolescent depression and low self-esteem as causes for drug use. Attempts to positively correlate emotional distress with drug use, however, have not been entirely successful. Results have been mixed. Even when relationships have been found, they have tended to be small (Cockett and Marks 1969; Galli and Stone 1975; Spevack and Pihl 1976; Spotts and Shontz 1980, 1984*a*, 1984*b*; Swaim 1987, 1991; Swaim et al. 1989).

Because of space limitations, this chapter has not dealt with gender differences. To this point, this has not created a problem because results for most risk factors are quite similar for males and females. However, gender differences in the relationships between drug use and depression and self-esteem are considerable. First, females at both grade levels are more likely than males to suffer from depression and low self-esteem. Second, the differences between male drug-using and nonusing groups in these emotional distress problems are small, while the differences between drug users and nonusers among females are quite large (figure 10).

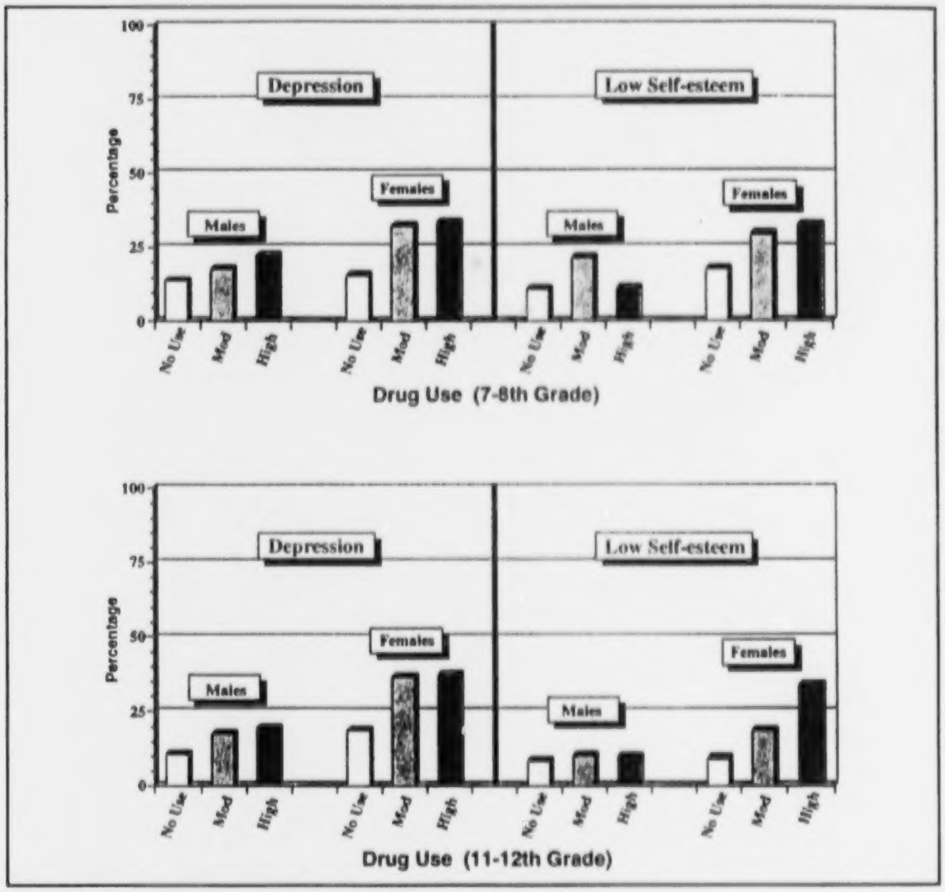

FIGURE 10. *Depression, self-esteem, and drug use.*

Some self-medication theories of drug use suggest that people take drugs because they are chronically distressed and drugs help make them feel better. However, recent research on alcoholics shows that the connection between depression and alcoholism is not strong and that the depression often appears well after the onset of alcoholism. On the other hand, Tschann and associates (1994) found that general emotional distress can precede drug use among sixth and seventh graders. The results presented here suggest that depression may be a risk factor for drug use primarily among young adolescent females.

Research on the relationship between self-esteem and drug use has also been inconsistent. As in this study, some find that drug users are more likely to have low self-esteem. Other studies find no differences between drug users and nonusers, while still others find that young children with high self-esteem are slightly more likely to try drugs.

These mixed results make more sense when the items used to measure them are examined. For example, the item "I am proud of myself" can be related to a number of personal attributes. One youth could say, "I am proud of myself because I am an excellent student." That kind of school adjustment pride would probably relate to lower drug use because doing well in school is related to lower drug use. Another student could say, "I am proud of myself because I am tall." That kind of self-esteem would probably not be related to drug use became height does not predict drug use. A female student might say, "I am proud of myself because I am physically mature and can date older boys." This kind of self-esteem might be positively related to drug use because early physical maturity in girls has been shown to be related to earlier use of marijuana. Perhaps the worst case linking high self-esteem to drug use would be a youth who says, "I am proud of myself because I am a member of a street gang."

Children who fail in other areas often can find acceptance and self-esteem through their street smarts and gang membership. Gang membership not only relates to drug use but can also mean drug distribution and involvement in other criminal behaviors. Thus, self-esteem can come from many sources. When it is rooted in good family relationships and good school adjustment, it is a positive force. For adolescents, another important source of self-esteem is peers. When self-esteem comes from being accepted by and liked by "good kids," it is likely to be a personal asset, and high self-esteem is likely to include avoidance of drugs. On the other hand, when self-esteem comes from being accepted by peers who are using drugs, drug use can become part of trying to maintain self-esteem. As with depression, a higher frequency of self-esteem problems has been found among adolescent females. Moreover, this study shows that rural girls who use drugs are more likely than other girls to experience low self-esteem.

Drug Use, Anger, and the Need for Excitement and Taking Risks

Unlike depression and low self-esteem, chronic anger has consistently shown a significant relationship with substance use (Oetting et al. 1989; Swaim et al. 1989). Young women are as likely to have high trait anger as young men (Deffenbacher 1992; Spielberger 1988), and there are no gender differences in the percent at risk for drug use because of anger. Minor gender differences do exist in the consequences of high anger. Angry men are more likely than women to report doing damage to property and to other people (Lynch and Deffenbacher 1995).

Several studies have also shown a strong connection between sensation-seeking and adolescent drug use (Donohew 1988, 1990; Donohew et al. 1990, 1991; Segal and Singer 1976; Spotts and Schontz 1984*c*; Zuckerman 1988; Zuckerman et al. 1978). As with anger, sensation-seeking males and females are both at risk for drug use (Zuckerman 1994). Figure 11 shows that drug use is related to both anger and excitement-seeking in this sample.

When angry youth get drunk, they seem to get into more trouble than other youth who get drunk (Leibsohn et al. 1994); they get into fights, argue with police, and drive recklessly. These negative behaviors probably also occur under the influence of other mind-altering substances.

Adolescents who have a high need for excitement tend to try many different activities in their search for novelty. Drugs may present one way in which they can experiment and find excitement; both the effect of the drugs and the danger of being caught can be exciting. It seems likely that young people with a high need for excitement will form peer clusters with similar youth and that the group will have a greater potential for risky behavior than the individuals alone. Unlike anger, which most often is a destructive emotion, the need for excitement can be an asset or a liability. It can be a motivation to be creative, to try new things, to explore and learn new skills. It also can create problems when it leads to speeding, dangerous actions, and experimenting with drugs.

Drug Use and Deviance

The personal characteristic most strongly linked to drug use is a general tendency toward deviance. Every study that has examined tolerance of

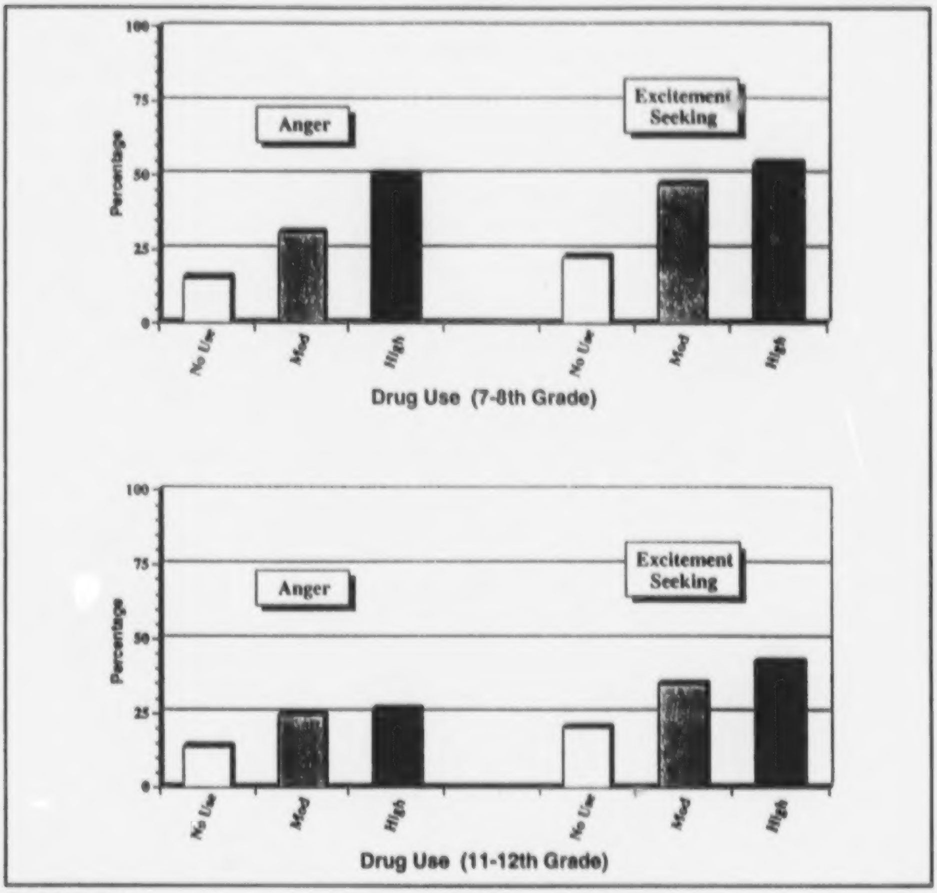

FIGURE 11. *Anger, excitement seeking, and drug use.*

deviance, unconventionality, or deviant behavior has found these characteristics to be related to drug use (Brook et al. 1980, 1984, 1985, 1990, 1992; Jessor et al. 1968; Jessor and Jessor 1977, 1978; Newcomb and Bentler 1988; Oetting and Beauvais 1989).

Figure 12 shows that drug-using youth were more likely to lie, cheat, or steal and to be tolerant of these deviant behaviors. Moreover, drug-using rural youth were more likely than other rural youth to have committed a crime (robbery, vandalism, car theft, or some other crime) and to have been arrested.

The gang involvement measure was included because of the high potential for deviance found in typical street gangs in larger cities. Until

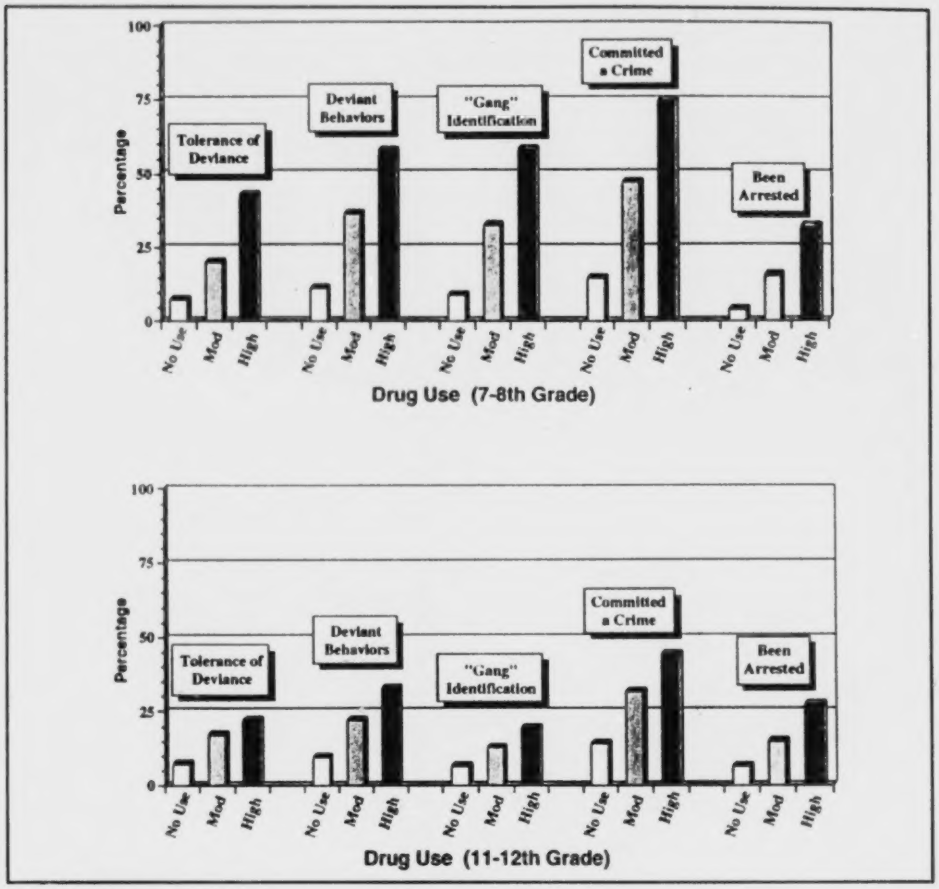

FIGURE 12. *Delinquency and drug use.*

recently, it was thought that rural youth were not involved in gangs, but this assumption may no longer hold true (Donnermeyer 1994). Street gang members have moved into rural areas to produce and market drugs.

Young people may have very different beliefs about what constitutes a street gang. Thus, responses to this question should not be used as an accurate indicator of the level of gang activity in rural America because there is no way of knowing what kind of gang a youth is referring to when answering this question. Regardless of definition, more than half of the seventh to eighth grade students who were highly drug involved had some kind of gang identification; they had been, were, or wanted to be gang members. A comparison of these data with the authors' data from metropolitan areas suggests that the percent of youth with some gang identification is the same for rural and urban youth, although the rates would undoubtedly be higher in an urban ghetto or barrio.

Figure 13 shows the rates of violent behaviors among the seventh to eighth grade youth. The rate reported for having "beaten up someone" was quite high. The rates for the other violent behaviors were lower, but their prevalence among drug users was higher than among nonusers. A considerable amount of personal physical conflict goes on in elementary, middle, and junior high schools, and drug users are likely to be involved in producing that violence.

A comparison of the rural and urban data indicates that rural youth are more frequently involved in fights; the rates for rural youth are about 5 percent higher than those for urban youth. However, the proportion of youth engaged in other violent or potentially violent behaviors was quite similar across the rural and urban samples. Because a rifle or shotgun may be viewed as part of the general equipment for farming or ranching, it was expected that rural youth would have a higher rate of taking a gun

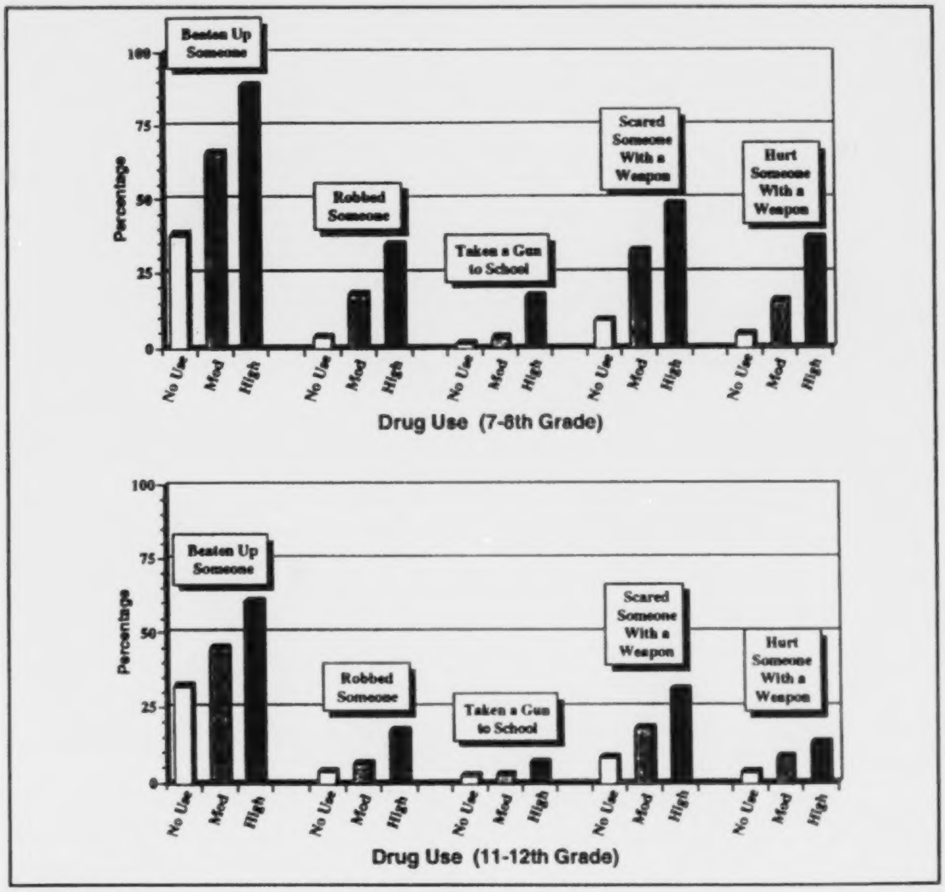

FIGURE 13. *Violence and drug use.*

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to school. There were, however, almost no differences between rural and urban youth on this measure.

Drug Use and Victims of Violence

Figure 14 shows that many rural youth had been victims of violence. The most common form was being beaten up by someone other than a family member, reported by more than 16 percent of the sample. A considerable number had also been robbed, hurt with a weapon, or sexually assaulted. Among seventh to eighth graders, drug users were noticeably more likely than nonusers to have been beaten, robbed, or hurt with a weapon.

As expected, females were more likely to be raped or sexually assaulted than males; being sexually assaulted is strongly linked to drug use. Among seventh to eighth grade students, nearly one in five males and almost half of the females with a high level of drug involvement reported sexual assault.

These data clearly illustrate that even though drugs may be used socially by some young people, they are also associated with crime and violence.

DISCUSSION AND CONCLUSION

Has anything new been learned about rural adolescents' drug use? Only if it is a new idea that risk factors important for understanding drug use among urban and rural youth are similar. At one time, rural adolescents were protected from drug use (Robertson 1994), but findings indicate that the prevalence of adolescent drug use is now fairly constant across areas of the country defined by population density and proximity to urban centers (Edwards, this volume). The findings reported in this chapter highlight these similarities. They examine personal and social factors that place both urban and rural youth at risk, and call into question aspects of rural communities, schools, family life, and peer group associations that may contribute to increased of drug use among rural youth.

Although drugs have powerful psychoactive effects, adolescent drug use is predominantly a social behavior rather than a response to the addictive properties of drugs. With few exceptions, adolescents are neither addicted to nor dependent on drugs. Except for tobacco, they rarely use enough of any single drug to develop physiological dependence. The risk

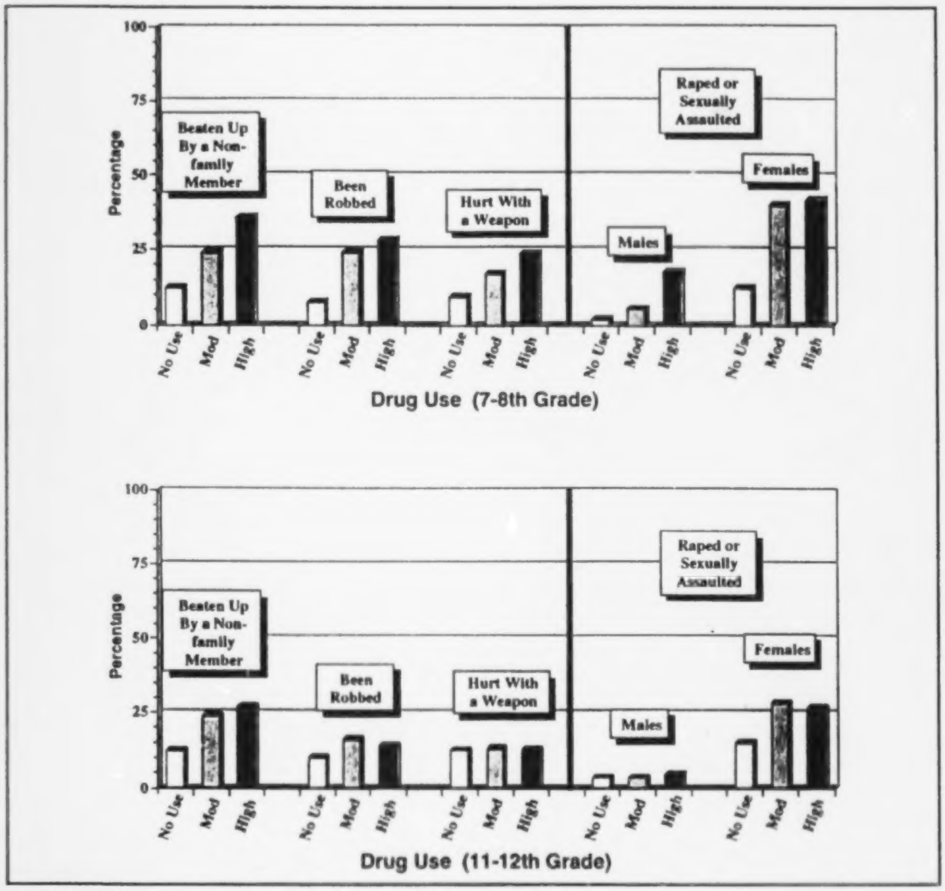

FIGURE 14. *Victimization and drug use.*

factors for adolescent drug use, therefore, are more likely to be social and psychological than physiological. Family, school, and peers are the primary socialization forces in a youth's life, and the results presented here are consistent with the view that drug use is a social behavior determined by socialization. Figures 1 through 9 confirm that family, school, and peer characteristics are related to drug use among rural youth. The orderly relationship found between drug involvement and each of these risk factors attests to the validity of these findings. Nearly every risk factor graph illustrates that nonusers have the lowest number of risk factors; those who are moderately drug involved have a greater risk, and those who are highly drug involved have the greatest risk.

Families can have a direct influence on substance use, particularly the substances legal for adult use—alcohol and tobacco. The presence of a smoking parent doubles the risk of a child's smoking, and the risk

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quadruples if the parent's attitude toward the child's smoking is conducive. Families can also encourage adolescent alcohol use. Only about half of the juniors and seniors in this study believed that their parents would try hard to stop them from getting drunk. In focus groups in rural communities, parents often make such statements as, "I don't mind them drinking, it's better than using drugs," and "I just tell them to stay away from 6th street, that's where the sheriff is." It is less common for parents to tolerate the use of illicit drugs, although there may be greater tolerance for marijuana use among parents who used marijuana in their youth. Those parents need to know that the marijuana used today is as much as 500 percent stronger than what was available 20 years ago (O'Dea et al., this volume).

However, much of the family influence on drug use is indirect. For example, this study shows that drug use increases when young people believe their families do not care and when there is family conflict. Similar effects occur with regard to school adjustment. Children with problems in this area are more likely to select friends who also are having problems, and those peer clusters are more likely to get involved with drugs. School adjustment rates vary across rural communities. In some rural areas, for example, dropout is rare; everyone expects adolescents to finish high school, and they do. In one of the nine communities in this study, 21 percent of 11th to 12th graders had flunked a year of school, whereas the rate in another community was only 2 percent. Only the most extreme school adjustment problems result in dropout. Dropouts typically have higher rates of drug involvement than youth who stay in school. It is not clear whether the rate of failing a year or whether higher or lower dropout rates are related to the community's rate of drug use; more data on drug use in rural communities are needed to answer these questions.

Some personal characteristics are also associated with drug use. For example, young women who are depressed and/or have low self-esteem may find that drug use relieves their negative feelings. It may also make them more susceptible to involvement with drug-using peers. Moreover, angry youth and adolescents with a high need for excitement or risk-taking may associate with others who have similar interactional styles and activity levels. Unfortunately, drug use may satisfy the need for risky and exciting activity. These hypotheses warrant further study to inform understanding of why and how young people with certain personality traits have an increased potential for drug use.

The most powerful immediate influence on drug use is peers. Children with relational problems at home have an affinity for other youth with problems with whom they form peer clusters with a high potential for drug use. Thus, rural adolescent drug users are involved with drug-using peers and those peers are likely to reinforce drug use. On the other hand, nonusers are more likely to have friends who would try to stop them from using drugs.

When there are strong bonds between an adolescent and his or her family, when school adjustment is good, and when a youth selects peers who are also doing well in school and who discourage drug use, the chances of serious drug involvement are greatly reduced. When there are breakdowns in any of these relationships, the chances for involvement with drugs are increased. Studies of the accumulation of risk factors show that there is an almost linear relationship; the greater the number of risk factors, the greater the chances of drug use (Swaim 1991).

Even though the personal and social risk factors are generally the same for urban and rural youth, there is likely to be more variability in risk factors across rural towns. Because a wide range of people are grouped together in urban areas, base rates for various problems found in one urban location are similar to those found in others. By definition, rural towns are small and the people within rural towns are likely to be more homogeneous in attitudes, values, and behaviors than those living in urban settings. Therefore, small towns are likely to differ widely from one another, with some having high levels of a particular problem and others having low levels. The variability in drug use and prevalence of risk factors in rural areas is important and the relationship between the two needs to be examined.

A major need in rural substance abuse research is a focus on the relationships among community characteristics, other risk factors, and drug use. Community characteristics probably affect drug use through their influence on the primary agents of socialization. Community influences work through various mechanisms, usually sociopolitical, but also environmental, geographic, and in other ways. For example, exposure to toxic wastes or high lead levels can have neurological consequences that influence the child's ability to bond with parents, limit learning ability, prevent adequate school bonding, and result in increased potential for drug use. More often, sociopolitical characteristics of the community influence social interactions. For example, a high poverty rate in a community could influence the stability of families and limit the ability of schools to provide an environment that allows for strong school bonding. These factors would increase rates of adolescent drug use. Similar effects would be expected in areas characterized by such other community risk factors as high levels of neighborhood crime. In general, factors associated with the primary socialization agents are the major determinants of substance use. However, community characteristics can influence both the factors and agents. Because rural communities are smaller and often homogeneous, they offer a rich ground for this type of research.

The results of this study also illustrate that drug use is not a singular problem. Drug use, particularly heavy use, is associated with other problem behaviors, criminal acts, and violence. One of the questions that has been asked about young people who are in trouble is, "Which came first, delinquency or drugs?" Longitudinal and prospective research studies suggest that many youth who are heavily involved with drugs showed signs of delinquency before initiating drug use (Elliott et al. 1988). In this study, drug use seems to be one more aspect of a continuing pattern of general delinquency. But, alcohol and drugs can also encourage delinquency and violence, and many reports show that crimes and violence take place while the person is drunk or high. In a practical sense, the question "Which came first?" may not be important for the adolescents themselves. It is more important to know that drug use, particularly heavy drug use, is likely to be associated with other problem behaviors and that prevention planning for high-risk youth must deal with the full constellation of problem behaviors.

Despite the relationship between drug use and deviance, most rural students who use drugs are not deviant. Differences in deviance between users and nonusers are larger for seventh to eighth graders than for older youth. This is probably because the few young drug users are deviant in several areas and drug use is only one manifestation of a much larger problem. Older drug users include adolescents with severe problems, others with lesser problems, and others who use drugs for social reasons. Thus, just because drug use is present, the user is not necessarily involved in other kinds of criminal or problem behaviors. In fact, for many youth, drug use is normative in that it is part of the evolving social scene of otherwise good kids. However, prolonged heavy use of drugs, using drugs as a means of dealing with emotional or personal crises, or drug use in the context of a major stressful event can redefine the situation, making the social user habitual or dependent.

Although the results of this study provide a start to understanding risk factors among rural youth, they are only a beginning. A major research investment is needed to determine how rural community characteristics influence risk factors, how risk factors lead to the formation of deviant peer clusters, how normative substance use is encouraged and maintained, and whether there are regional, ethnic, or other variables that lead to different relationships among risk factors and drug use in rural communities.

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ACKNOWLEDGMENT

Peer cluster theory and its accompanying Prevention Planning Model were developed at the Tri-Ethnic Center for Prevention Research, Colorado State University, with the assistance of National Institute on Drug Abuse (NIDA) grant #P50 DA07074. Based on these theories, the Prevention Planning Survey and The American Drug and Alcohol Survey,™ the instruments used in this study were developed with funding from small business grants from NIDA to Rocky Mountain Behavioral Science Institute (RMBSI), Inc., Ft. Collins, CO, a private, for-profit corporation (1R43DA05527, 1R44DA03656, 1R44DA06580).

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Introduction

Gayle M. Boyd

There are well-documented adverse health, economic, and social consequences associated with the abuse of alcohol and illicit drugs in the United States, and their impact is felt by individual abusers, their families, friends, associates, and society as a whole. These negative effects have been explored in the general population to varying degrees, but relatively little is known about the costs and consequences of substance abuse in rural America. An understanding of the nature and distribution of substance abuse-related problems is important for needs assessment, development, testing, and dissemination of effective prevention and treatment interventions, and for allocation of services resources.

The four chapters in this section explore the full range of adverse outcomes from alcohol and drug abuse as they are experienced in rural areas of the United States. Two chapters focus on alcohol-related problems and two on illicit drugs; within these pairs, one addresses health consequences and the other social and economic costs. All of the authors faced similar problems from limited data availability, and the need for additional research on rural populations is a recurring theme.

Another recurring theme is the importance of acknowledging the heterogeneity among rural areas in the design and interpretation of research. Differences in locale, demographics, economy, and local culture are accompanied by differences in the prevalence of alcohol and drug abuse, and differences in type and magnitude of associated costs and consequences will follow. All the authors stress the importance of recognizing the uniqueness of different rural groups, and each cautions against treating data from rural areas across the Nation as though they represent a single, cohesive population.

However, rural localities are not totally unique, and commonalities among them should permit selected generalization across subsets. Additionally, research resources are not adequate to examine each separately. What is needed is a typology of rural communities that identifies key characteristics relevant to the presence and nature of alcohol and drug abuse problems. In the chapter on "The Economic and Social Costs of Drug Abuse Among the Rural Population," Donnermeyer suggests some key dimensions that should be considered.

The differences among rural areas can provide opportunities for comparative research to identify community-level factors that are most predictive of the overall burden due to alcohol misuse and/or drug abuse. These, in turn, may suggest appropriate interventions to reduce alcohol- or drug-related problems. Differences in policies and practices or the institution of new programs can sometimes be used as natural experiments to test hypotheses regarding the potential effectiveness of environmental interventions.

Accurate assessment of the health, social, and economic costs from alcohol and drug abuse in rural communities may constitute intervention in itself. This information could motivate community leaders or officials to undertake a program of change. Similarly, this kind of data can be used to justify allocation of state or federal resources to high-problem areas.

The causal relationship between substance use and adverse outcomes is often more straightforward for health consequences than for economic and social costs. As Kelleher and Robbins point out in their chapter, "Social and Economic Consequences of Rural Alcohol Use," the data on social effects and substance use are often correlational; in some cases, convincing arguments can be made that substance use follows from the stressful conditions it has been hypothesized to produce. However, even quantifying the role of alcohol and drugs in morbidity and mortality can be difficult. For instance, what role does substance abuse play in an individual's failure to care for personal health, resulting in susceptibility to illness? The relationship between intravenous drug use and the transmission of the human immunodeficiency (HIV) virus is clear cut, but how much of the morbidity and mortality associated with acquired immunodeficiency syndrome (AIDS) can be attributed to alcohol-induced impairment of decisionmaking regarding sexual practices (e.g., safe sex)?

The chapter by Brody and colleagues, "Health Consequences of Alcohol Use in Rural America," reviews the known health effects from alcohol use and abuse in the general population. While acknowledging the limitations of using national-level data, the authors provide estimates of the prevalence of alcohol use and abuse in metropolitan and nonmetropolitan areas. It is argued that similarities in estimated prevalence of heavy drinking between metropolitan and nonmetropolitan areas suggest that, collectively, the areas share similar risks for alcohol health consequences. This chapter also presents a more detailed profile of a specific rural population, African-Americans living in rural Georgia.

Rates for alcohol-related mortality in rural Georgia counties exceed the national median. The authors argue that delaying the initiation of drinking and preventing alcohol misuse by youth is an important way of reducing current and future health consequences. Research exploring family processes that may underlie early onset in rural African-American adolescents is presented as a preliminary step toward the development of interventions.

In their chapter, "Health Consequences of Rural Illicit Drug Use: Questions Without Answers," Fisher and coauthors describe their own research on drug-related health problems in Anchorage, Alaska, a population center in a unique rural State. Alaska Natives and African-Americans were overrepresented in the sample. Information on drug-related health conditions in rural areas is very limited, and the authors discuss some of the challenges associated with this research: inaccessibility (especially in Alaska), problems of maintaining confidentiality in small communities, lack of representation in national data-collection efforts, and local resistance to researchers. These authors, as did Brody and colleagues, strongly recommend involving community members in the research endeavor. Methodological problems that can greatly reduce data reliability are discussed in some detail.

Although the potential health consequences from drug use are the same in urban and rural areas, their distribution in the population sometimes differs. The authors note that the appearance of HIV/AIDS in rural areas has lagged behind the onset of the epidemic in urban areas and can be traced to patterns of migration. In Anchorage, for instance, gay intravenous drug users (IVDUs) are much more likely to be HIV positive than are heterosexual IVDUs. In the absence of intervention, this finding predicts an increase in HIV prevalence among heterosexual IVDUs and spread to the population involved in sex trade, similar to the pattern already observed in urban areas.

As were other contributors to this section, Donnermeyer was stymied in efforts to develop a comprehensive estimate of consequences of substance abuse for rural areas due to the paucity of data. Donnermeyer has presented, instead, a framework for the ideal assessment of economic and social costs associated with the use of illegal drugs and a very preliminary indication of their likely magnitude. In overview, the distinction between economic and social costs equates the former with costs relating to the quantities of life and the latter with impacts on qualities of life. Donnermeyer's typology of the different costs describes an ever-widening ripple of negative impact that extends from the individual drug user at the epicenter, to immediate family, friends, and associates, and ultimately to the entire society. The framework encompasses immediate and more obvious costs, such as resources spent on substances and treatment and alterations in patterns of social interaction of users. It also includes more subtle and remote effects, such as the value of productive time lost in criminal careers and general societal reactions to the presence of substance abuse. It is clear from the review that rural areas have not escaped these problems, and in all but the least densely populated rural counties, patterns of drug use by adolescents may be very similar to those in metropolitan areas.

Kelleher and Robbins also describe direct and indirect social and economic costs. Their discussion includes social costs to the drinker that result from the acute effects of alcohol on social interactions (e.g., disinhibition and impaired judgment) and more distal effects that follow from impairment in drinkers' ability to fulfill the obligations and responsibilities of their social roles. The authors describe key roles (e.g., as marital, parental, and work) and the ways in which these roles can be disrupted by alcohol use. Interestingly, the authors note that there is room for considerable variability between urban and rural areas and among rural areas in the way social functioning is impacted by alcohol abuse. The social context defines both expectations for individual behavior and expectations for alcohol use. Because these expectations can differ among communities, communities can also differ in whether particular interaction patterns are experienced, by individuals or society collectively, as costs.

There are some fundamental differences between the use of alcohol and illicit drugs that shape the nature and magnitude of their negative consequences. Foremost, the use of alcohol is legal for persons over the age of 21. Although legal, alcohol is clearly subject to abuse, and an estimated 7.4 percent of the population meet diagnostic criteria for abusive and/or dependent drinking (Grant et al. 1994). But, for many individuals, moderate use does not appear to be detrimental, and some have argued for the existence of social and health benefits (NIAAA 1992). This difference in legality has enormous implications for social costs associated with the criminal justice system, economic costs of obtaining the substance (street value), disruption to the lives of users, and disruption to society through crime associated with providing and obtaining drugs and diversion of law enforcement resources.

However, alcohol use also impacts the law enforcement and judicial systems. Even though it is a legal substance, certain kinds of use are illegal, notably underage drinking and drunk driving. Drinking is often associated with illegal behaviors, including public disturbance, vandalism, assault, and violence. In addition, persons under the influence of alcohol are more vulnerable to victimization by others (NIAAA 1994).

The prevalence of alcohol use is considerably higher than drug abuse, its direct and indirect costs are experienced by more people. Although an estimated 11.8 percent of the population used at least one illegal drug in 1993, fully two-thirds of the population (66.5 percent) drank alcohol in that period (SAMHSA 1994). The estimates for prevalence of use in the past month are even more disparate: 5.6 percent for illegal drugs and 49.6 percent for alcohol. In addition, while not all drinkers will experience the chronic health and social consequences associated with abusive drinking, even occasional drinkers are at risk for negative acute effects such as accidents, drug interaction, impaired social interactions, and consequences of decisions made while intoxicated.

Additionally, these differences between alcohol and other drugs in legality and prevalence of use have major implications for interventions that seek to reduce their negative impact on society. The goal of drug-abuse intervention is unequivocal—the elimination of all substance use. However, the goal(s) for alcohol-abuse intervention must be more complex—elimination of underage, unsafe, abusive, and dependent drinking, but not moderate drinking by healthy adults. Differences between alcohol and other drugs in social acceptability, normative practices, and legitimate versus illegitimate business concerns give rise to different barriers to change.

It should be remembered that for both alcohol-related problems and drug abuse, accurate assessment of the health, social, and economic costs from alcohol and drug abuse in rural areas may constitute intervention in itself. If made available to individual communities, this information can serve to reduce social acceptability of substance abuse and to motivate community leaders and the general population to undertake a program of change. Additionally, such data can be used to justify allocation of State or Federal resources to high-problem and underserved areas.

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Health Consequences of Alcohol Use in Rural America

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INTRODUCTION

Alcohol abuse and dependence are costly to society in both human and economic terms. In 1989, 108,458 deaths in the United States were alcohol related (Stinson et al. 1993), accounting for about 5 percent of all deaths that year and making alcohol the fourth leading cause of death after heart disease, cancer, and stroke (National Center for Health Statistics (NCHS) 1994*a*). These deaths represent in excess of 1.5 million years of potential life lost to age 65 and nearly 3 billion years of potential life lost to full life expectancy (Schultz et al. 1990). Alcohol-related morbidity also presents a significant burden to the Nation's health care system. Studies suggest that between 15 and 30 percent of patients in short-stay (average length of stay of fewer than 30 days) general hospitals have alcohol problems, regardless of their admitting diagnosis (Umbricht-Schneiter et al. 1991). In addition, families of alcoholics consume more health care services than do those of nonalcoholics (Holder 1987).

While there is a considerable body of research describing the prevalence and patterns of alcohol use and abuse and related health consequences in the United States, little is information specific to rural areas. As a first approximation of the potential burden in rural areas from alcohol-related morbidity and mortality, relationships between alcohol consumption and health outcomes established for the general population can be extrapolated. Therefore, patterns of alcohol use and health effects in the general population will be briefly reviewed, and relevant national-level data for nonmetropolitan populations will be presented.

Due to the heterogeneity among rural populations, the use of national data, in which data from rural areas throughout the country are combined, is a crude substitute for more indepth studies of specific regions. The latter part of this chapter will focus on rural counties in the State of Georgia. Epidemiologic data on alcohol problem indicators in this area will be described, and preliminary findings will be presented from a study by the first author and colleagues on predictors of alcohol misuse.

PREVALENCE OF ALCOHOL USE AND ABUSE

> Alcohol abuse refers to patterns of problem drinking that result in health consequences, social problems, or both. Alcohol dependence, often called alcoholism, refers to a disease that is characterized by abnormal alcohol-seeking behavior that leads to impaired control over drinking. Although alcoholics and alcohol abusers may experience many of the same harmful effects of drinking, alcoholics can be distinguished by their physical dependence on alcohol and their impaired control over drinking (National Institute on Alcohol Abuse and Alcoholism (NIAAA) 1994*a*, p. xxi).

National Data

Based on data from the 1988 National Health Interview Survey (NHIS), approximately 32 percent of men and 53 percent of women age 18 and over abstain from alcoholic beverages (Williams and DeBakey 1992). The remaining 68 percent of men and 47 percent of women are current users of alcohol. Among these drinkers, the majority are light or moderate drinkers. Only 19 percent of men who drink and 7 percent of women are classified as heavier drinkers, indicating they consume on average two or more drinks every day.

Data from this survey have also been used to estimate the prevalence of alcohol abuse and alcohol dependence nationally (Grant et al. 1991). An estimated 8.63 percent of the population, over 15 million people, met criteria for alcohol abuse or dependence specified in the *Diagnostic and Statistical Manual of Mental Disorders*, 3d edition, revised (DSM-III-R) (American Psychiatric Association 1987). Abuse and dependence were more prevalent among males (13.35 percent) than females (4.36 percent).

Nonmetropolitan Areas

Use of national data sources to develop estimates for rural areas is complicated by the fact that different classification systems may be used for urbanicity. Rural, as defined by the Census Bureau, is based on population density and includes territory outside places with a population of 2,500 or more or outside of urbanized areas. The data reported below are based on a classification system adopted by the Office of Management and Budget, in which entire counties are designated as metropolitan (MSA) or nonmetropolitan (non-MSA). Metropolitan counties contain a place or urbanized area of 50,000 or more and a total population of at least 100,000.

These two classification systems overlap, but are not synonymous. It can easily be seen that a geographically large MSA county could contain areas with low population density that are not proximal to an urbanized area. Similarly, parts of a non-MSA county could actually be suburbs for a large metropolitan area lying in an adjacent county. Approximately 34.5 percent of the non-MSA population lives in urban areas, and 16.1 percent of the MSA population are rural (Rogers et al. 1993). Almost 55 million persons, or approximately 22 percent of the total U.S. population, live in nonmetropolitan counties (NCHS 1994*b*).

Alcohol-related data from the 1988 NHIS were analyzed for this chapter according to place of residence designations—MSA or non-MSA (table 1). Comparisons of means indicated significantly more nondrinkers and infrequent drinkers (fewer than 8 drinks in the past year) in the non-MSA areas. Only 44.1 percent of the non-MSA population were current drinkers, compared to 53.9 percent of MSA residents. However, among the current drinkers, MSA and non-MSA areas did not differ in the prevalence of heavier drinking. In both areas, approximately 14 to 15 percent of drinkers consumed an average of two or more drinks daily.

Estimates of the prevalence of persons meeting DSM-III-R criteria for abuse and dependence have not been developed for the non-MSA population, but the survey did include a question in which respondents were asked directly whether they had ever been an alcoholic. There were no differences between the MSA and non-MSA areas in the proportion of persons who reported having been an alcoholic at some time in their life.

Data from the 1984 and 1990 National Alcohol Surveys conducted by the Alcohol Research Group in Berkeley, California also allow the examination of drinking patterns and problems by urbanicity (Midanik and Clark 1995). This study employed different classification criteria for drinking status, so estimates are not comparable with the 1988 NHIS survey. However, the pattern of findings regarding urbanicity are similar to those reported above. In cross-sectional analyses of the 1990 data,

TABLE 1. *Prevalence of alcohol consumption levels and self-reported alcoholism by gender in metropolitan and nonmetropolitan areas, 1988.*

Location	MSA			Non-MSA		
Gender	M	F	T	M	F	T
Drinking category				Percent		
Abstainer[1]	10.0	23.3	17.0	13.1**	33.5***	23.8***
Former drinker[2]	18.3	17.8	18.0	21.9***	18.0	19.8*
Infrequent drinker[3]	6.3	15.4	11.1	7.6	16.3	12.2*
Current drinker	65.4	43.5	53.9	57.5***	32.1***	44.1***
Light drinker[4]	39.7	58.6	47.7	43.4**	62.6**	50.8**
Moderate drinker[5]	40.3	33.5	37.4	38.4	29.6**	35.0**
Heavy drinker[6]	20.1	8.0	14.9	18.2	7.7	14.2
Has been an alcoholic	3.3	1.1	2.1	3.9	0.8	2.2

KEY: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.002$. 1 = Fewer than 12 drinks in lifetime. 2 = 12 or more drinks in 1 year, but none in past year. 3 = Average less than 0.01 oz. alcohol per day in past year. 4 = Average 0.01 to 0.2 oz. ethanol per day in past year. 5 = Average 0.21 to 0.99 oz. ethanol per day in past year. 6 = Average 1 or more oz. ethanol per day in past year.

SOURCE: Data from 1988 National Health Interview Survey.

Midanik and Clark contrasted respondents in nonmetropolitan areas with those in metropolitan areas of less than 50,000 population and of 50,000 or more. Respondents in large and small metropolitan areas did not differ significantly from each other, but there were significant differences ($p < 0.05$) between the metropolitan and nonmetropolitan groups on all measures except the five drinks per occasion measure (table 2). Nonmetropolitan respondents were less likely to be current drinkers and less likely to be weekly drinkers but were just as likely to report having five or more drinks on one occasion at least once a week during the previous year.

TABLE 2. *Prevalence of drinking, dependence symptoms, and social consequences in metropolitan and nonmetropolitan areas.*

Drinking characteristics	Metropolitan > 50,000		Metropolitan < 50,000		Nonmetropolitan	
	1984	1990	1984	1990	1984	1990
	Percent					
Current drinkers[1]	72.5	67.3	78.6	70.0	63.5	56.3
Weekly drinkers[2]	39.7	31.2	39.6	30.6	31.6	23.7
Having 5+ drinks/occasion weekly[3]	7.2	4.8	7.1	2.7	4.9	3.7
3+ dependence symptoms[4]	7.9	9.7	6.3	5.6	5.8	6.4
2+ social consequences[5]	13.9	13.5	9.0	10.7	9.5	14.2

KEY: 1 = Any alcoholic beverage use in the past year. 2 = Any alcoholic beverage use at least weekly in the past year. 3 = Having 5 or more drinks on one occasion weekly or more often in the past year. 4 = Having experienced 3 or more of 13 symptoms of physical dependence in the past year. 5 = Having experienced 2 or more of 21 social consequences from drinking in the past year.

SOURCE: Data from 1984 and 1990 National Alcohol Surveys conducted by the Alcohol Research Group (Midanik and Clark 1995).

As shown in table 2, in general, lower rates of alcohol use were reported in 1990 than in 1984. Among nonmetropolitan respondents, fewer individuals reported being current drinkers or weekly drinkers in 1990. However, the number of drinkers who reported having five or more drinks on one occasion at least once a week during the previous year did not change significantly (Midanik and Clark 1994).

Using the same two data sets, rates of alcohol-related problems reported to have occurred over the past 12 months were examined. Problems were classified in two broad areas—symptoms of alcohol dependence (i.e., morning drinking, hands shaking) and social consequences (i.e., fighting while drinking, arguing while drinking). As expected, heavier drinkers were more likely to experience dependence symptoms and social consequences than were light and moderate drinkers. In regression analyses, neither urbanicity nor year of survey predicted the presence of drinking problems.

It appears from the three surveys presented here that the prevalence of drinking is lower in nonmetropolitan areas. However, these areas are similar to metropolitan areas in the presence of risk for heavy, dependent, and problem drinking. In the absence of data to the contrary, it must be assumed that they also share equally in risk for health consequences from these levels of consumption.

HEALTH EFFECTS OF ALCOHOL MISUSE

Alcohol consumption may be nonproblematic or it may have negative consequences, some of which directly affect physical or mental health. Other consequences, such as divorce or loss of a job, are not health related, although they may negatively impact on health indirectly through loss of income and concomitant loss of access to health care (see chapter by Kelleher and Robbins, this volume).

Negative health consequences of alcohol consumption are of three basic types: (1) the primary chronic disease resulting from long-term consumption of large quantities of alcohol—alcohol dependence or alcoholism; (2) other chronic disease consequences, such as alcoholic liver disease and alcoholic brain damage; and (3) the acute or immediate consequences of ingesting large quantities of alcohol in a short period of time (minutes or hours), such as alcohol poisoning or alcohol-related motor vehicle crash injuries. Because the majority of drinkers are not alcohol dependent, it is critical to keep in mind that a person need not be an alcoholic to suffer the negative health consequences of alcohol consumption. For example, teenagers may die in an alcohol-related crash following their first drinking episode or an individual may drink enough to damage the liver or any other organ without being an alcoholic.

Dependence

Key to the problem of alcoholism are the effects of alcohol on the brain itself. It has been known for millennia that alcohol ingestion creates a pleasurable state of mind, yielding after heavy drinking to confusion, incoordination, sedation, and coma. How alcohol produces intoxication is only now beginning to be understood. The brain adapts to long-term exposure to alcohol and eventually functions more normally in its presence (tolerance). When alcohol is withdrawn suddenly, this adaptive state becomes nonadaptive and tremors, hallucinations, and convulsions may ensue (physical dependence) (Charness 1990).

With repeated drinking, susceptible individuals develop a craving for alcohol that becomes the dominating motivational force, sustaining long-term drinking in the face of loss of family, job, and personal dignity (psychological dependence). Over the years, the brains of alcoholics develop lesions due to the toxic effects of alcohol and its breakdown products; liver failure, nutritional deficiency, and repeated episodes of trauma are also common. In many alcoholics, these accumulated insults result in social deterioration, inability to walk, and severely disabling disorders of memory and cognition and, with continued drinking, culminate in death (Charness 1990).

Chronic Health Effects

Alcohol affects every organ in the body. Drinking patterns, amount of alcohol consumed, length of time spent drinking, presence or absence of preexisting diseases or nutritional deficiencies, and genetic factors all influence an individual's likelihood of developing diseases from excessive drinking, as well as the severity of the diseases. Liver disease, the most prominent of these manifestations, is the leading cause of death among alcoholics (Rubin 1989); alcohol misuse is the leading cause of liver disease in America. In 1990, there were an estimated 39,815 deaths for which cirrhosis was an underlying or contributing cause. Approximately 900,000 persons in the United States have evidence of cirrhosis or chronic liver disease (Stroup et al. 1993).

Ninety percent of problem drinkers develop fatty liver, also called alcoholic steatosis; 40 percent develop alcoholic hepatitis and fibrosis (in which healthy liver tissue is replaced with scar tissue); and 15 percent to 30 percent develop cirrhosis. Both fatty liver and hepatitis are reversible if drinking is stopped, but cirrhosis is not.

The likelihood of developing cirrhosis increases with the amount consumed per day and the number of years over which drinking takes place, regardless of beverage type. Women are more susceptible than men to serious liver disease and it progresses more rapidly in women. Nutritional and genetic factors may also be important (NIAAA 1994*a*; Stroup et al. 1993). Metropolitan and nonmetropolitan areas do not differ in prevalence of liver disease (2.84 percent and 2.66 percent, respectively).

Alcoholic brain damage is manifested in a variety of impairments that range from specific disorders to generalized cognitive impairments. Alcoholic dementia results in loss or impairment of mental function, akin to Alzheimer's dementia. Korsakoff's syndrome, one of the most severe brain impairments found in alcoholics, is characterized by the inability to remember recent events or to learn new information (Oscar Berman 1990). Generalized cognitive impairments include absent-mindedness and deficits in learning, attention, memory, and the coordination of fine movements (Ryan and Butters 1986).

Acute pancreatitis is caused primarily by heavy alcohol consumption and gallstones. Approximately three-quarters of people with chronic pancreatitis have a history of heavy alcohol consumption (Van Thiel et al. 1981).

Degenerative changes of the heart and skeletal muscle may result from chronic alcohol consumption (Arria and Van Thiel 1992; Rubin 1989). It is estimated that 20 to 30 percent of cardiomyopathy cases can be attributed to alcohol abuse (NIAAA 1994*a*).

Reproductive disorders in both men and women are associated with alcohol. In women, they include anovulation, amenorrhea, and early menopause (Rubin 1989). Alcohol-related testicular atrophy may contribute significantly to sexual problems in male alcoholics.

Alcohol consumption is a major risk factor for hypertension (MacMahon 1987). Hypertension, in turn, contributes substantially to the risks of coronary heart disease, ischemic stroke, other complications of atherosclerosis, and damage to specific body organs (Labarthe and Roccella 1993).

An increased risk of cancer of the liver, esophagus, nasopharynx, and larynx is associated with chronic heavy alcohol consumption (Decker and Goldstein 1982; Driver and Swann 1987; Tuyns 1979). Although the evidence is less conclusive, some studies also suggest that alcohol consumption may play a role in cancers of the stomach, large bowel, and female breast (Driver and Swann 1987; Gapstur et al. 1991; Rosenberg 1965).

Fetal alcohol syndrome (FAS) describes a distinct cluster of birth defects that are observed in some children of alcoholic mothers. These include growth retardation, a specific pattern of facial morphological characteristics, and central nervous system effects, the most debilitating of which are mental handicaps and hyperactivity. Fetal alcohol effects (FAE) are also observed in some alcohol-exposed children who do not manifest the complete syndrome (NIAAA 1991*a*). These conditions are believed to be underreported, and it is difficult to estimate the incidence and prevalence of FAS/FAE. An Institute of Medicine (IOM) review of studies worldwide estimates the incidence of FAS to be between 0.5 and 3 cases per 1,000 live births (IOM 1995). Not all children of women who drink heavily during pregnancy develop FAS/FAE, and other biological and environmental factors are believed to play a role. Some populations, including African-Americans and Native Americans, appear to be at much higher risk. Clearly, there will be considerable variability in the prevalence of FAS/FAE among rural locales, depending at least in part on alcohol use practices and population subgroups.

Chronic alcohol abuse depresses the immune system and leaves the individual susceptible to infectious diseases, including pneumonia and tuberculosis (Roselle 1992). The possible role of alcohol in the transmission and progression of HIV/AIDS is under investigation (Kruger and Jerrells 1992).

The development of diabetes can be accelerated by alcohol use, as can the development of nerve and muscle damage. Additionally, a variety of nutritional and blood disorders are related to chronic heavy alcohol consumption (NIAAA 1990, 1994*a*).

Acute Health Effects

Acute effects from alcohol consumption can be equally as devastating as chronic effects, and even light or infrequent drinkers can be at risk. Young drinkers are at special risk for some acute effects, such as alcohol-related crashes and other accidents. Unintentional injuries account for about half of deaths among persons aged 15 to 24. Of these, 75 percent are motor vehicle crashes (Centers for Disease Control and Prevention (CDC) 1991).

Drinking drivers are more likely than nondrinking drivers to be seriously injured or killed when they are involved in accidents, and the likelihood of serious injury or death increases as blood alcohol concentration (BAC) increases. This risk appears to be higher for younger drivers than for older ones, and for women than for men (NIAAA 1994*a*).

In 1993, 44 percent of all U.S. traffic fatalities, a total of 17,461 deaths, were alcohol related. The highest rates of alcohol involvement in fatal crashes occurred among drivers aged 21 to 24, followed by drivers 25 to 44 and 16 to 20. Among drivers aged 16 to 20 and 21 to 24 who were involved in fatal crashes, 16.2 percent and 30.7 percent, respectively, had blood alcohol concentrations of 0.10 grams/decaliter (g/dL) or greater. In most States, this is the legal criterion for intoxication (National Highway Traffic Safety Administration 1993). Although these figures represent decreases from previous years, alcohol-related traffic fatalities remain a major adverse consequence of alcohol misuse.

Alcohol is involved in other forms of unintentional injury, including air crashes, drownings, and falls. Studies using medical examiner or coroner reports have estimated alcohol involvement in deaths from unintentional injury at 30 to 80 percent, varying with demographic characteristics, location, and methodology. The prevalence of alcohol involvement in emergency room trauma cases ranges from 15 to 25 percent. Alcohol has been associated with between 47 and 65 percent of adult drownings (NIAAA 1994*a*). Alcohol involvement in intentional injury, both homicide and suicide, is discussed elsewhere in this monograph.

Alcohol-induced impairment in the performance of complex tasks, such as driving, can begin at very low blood concentration levels (0.01 to 0.02 percent) and increases with higher levels of blood alcohol (NIAAA 1994*b*). Because the prevalence of heavier and problem drinking is similar in nonmetropolitan and metropolitan areas, these areas can be expected to share in risk for alcohol-induced impairment associated with higher consumption. However, environmental factors are also important determinants of whether impairment results in injury or other accidents. Important factors that will vary with urbanicity and location include quality of roads, miles typically driven, enforcement of driving under the influence (DUI) and other traffic laws, normative attitudes toward driving and drinking, and the presence of home and workplace hazards. Certainly farming, mining, logging, processing of agricultural products, and factories provide more opportunities for injury than do office and business environments. Correspondingly, data from the 1993 NHIS indicate higher annual rates for nonfatal injuries in non-MSA compared to MSA areas (24.3 versus 22.9 per 100 persons, $p < 0.001$) (NCHS 1994*b*).

CONCLUSION

It must be reiterated that the use of data from nonmetropolitan areas is only suggestive of patterns of alcohol consumption and related problems in rural areas. About a third of those living in non-MSA counties are in areas with a population density sufficiently high to be classified as urban, and only 54 percent of the rural population lives in nonmetropolitan counties (Rogers et al. 1993). Equally important, there are tremendous differences among rural areas in population demographics, economic bases, cultural values, and social norms regarding alcohol (Chavez et al. 1986; Chavez et al. 1988; Kirk 1979; Peters et al. 1989). The analyses of nonmetropolitan areas reported here do suggest that, collectively, rural areas are not protected from adverse health consequences of alcohol use.

Although rural areas appear to share similar risks for alcohol problems with the rest of the country, they may not be sharing in prevention and treatment efforts that are appropriate for their populations. Intervention efforts will need to be informed by studies focusing on particular rural locales, types of economies, and population subgroups. Profiles are needed of the nature and density of alcohol problems, factors, and processes underlying alcohol misuse, social, economic, and environmental resources and barriers, and community norms that might impact the acceptability and success of intervention efforts. The limited information available on rural alcohol use primarily focuses on predictors, correlates, and extent of alcohol use among rural adolescents (e.g., Chavez et al. 1986; Chavez et al. 1988; Fournet et al. 1990; Gibbons et al. 1986; Kirk

1979; Long and Boik 1993; Pruitt et al. 1991; Sarvela and McClendon 1988; Winfree 1985).

In keeping with this need for locale-specific studies, the remainder of this chapter will focus on a more specific population—persons living in rural counties in Georgia. Alcohol-related health conditions in these counties will be described, and factors underlying early onset of alcohol use in rural African-American youth will be explored in some detail.

ALCOHOL USE IN RURAL GEORGIA

Rural Georgia: An Overview

The first author and colleagues at the University of Georgia have worked extensively with residents in the rural areas of the State of Georgia. The following discussion of health problems related to alcohol consumption focuses on that rural population.

In 1990, more than 2 million people in Georgia lived in rural areas. The Georgia County Guide (Bachtel and Boatright 1993) defines rural areas as those that do not include any town or city with a population of more than 2,500. Although only a little over a third (37 percent) of the total State population lived in rural areas in 1990, in 129 of the 159 counties more than half of the population was rural (see figure 1). Of these counties, 44 were entirely rural; they will be the focus of the following discussion. Although no data are available documenting rates of alcohol-related morbidity among residents of these counties, estimates of alcohol-related death rates are available. The authors readily acknowledge the inherent limitations in relying on mortality rates to quantify health consequences. Alcohol-induced illnesses or injuries that do not result in death will not be represented; mortality rates are insensitive to new trends in alcohol use; alcohol-related conditions are underreported on death certificates (NIAAA 1991*b*, 1994*a*); and there is no indication of personal and social costs associated with illnesses and/or debilitation before death. However, in the absence of morbidity data, mortality rates can provide a useful first approximation of the alcohol-related health burden experienced in this population.

The U.S. Alcohol Epidemiologic Data Reference Manual (NIAAA 1991*b*) provides age-adjusted mortality rates (annual number of deaths per 100,000 population) for U.S. counties, based on data collected in

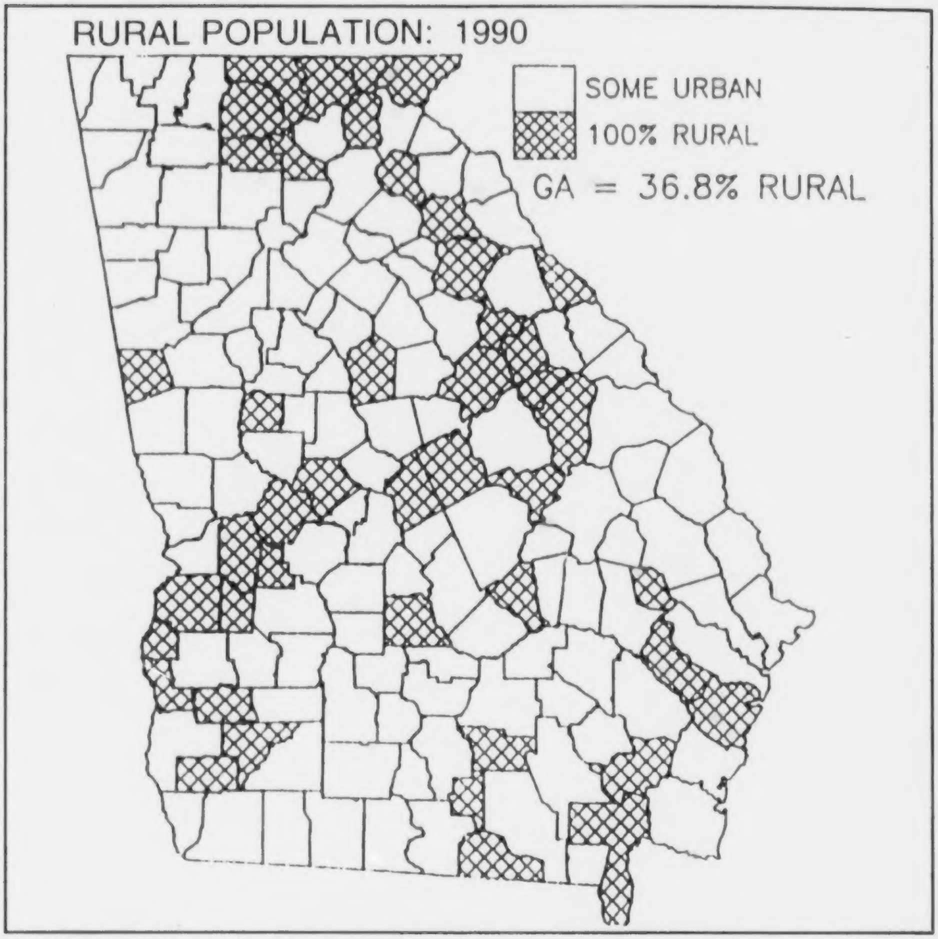

FIGURE 1. *Rural and nonrural counties in Georgia.*

1971, 1980, and 1983 through 1985. Weighted average mortality rates were computed across the 44 rural counties for each of 8 alcohol-related underlying causes of death. These data are displayed in figure 2. The top three bars represent deaths from unintentional (motor vehicle accidents) and intentional (suicide and homicide) injuries, and the bottom five represent deaths from alcohol-induced illness (cirrhosis, alcohol dependence syndrome, nondependent alcohol abuse, alcoholic psychoses, and alcohol poisoning).

In the 44 rural Georgia counties, deaths from alcohol-related injuries far outstripped those from illness. In fact, deaths from motor vehicle accidents alone occurred nearly three times as often as those from all five illness categories combined. More deaths also resulted from alcohol-related motor vehicle accidents (36.6 per 100,000) than from the other

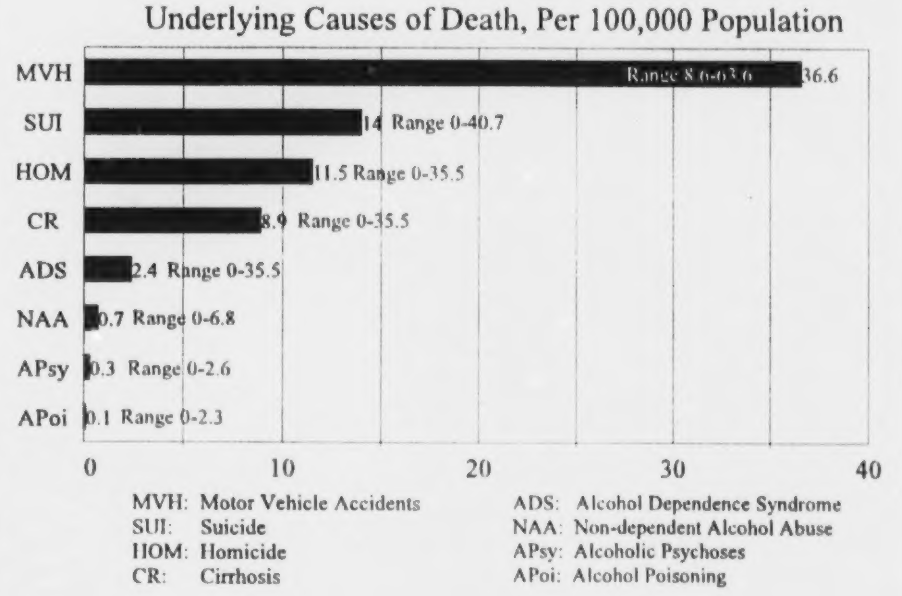

FIGURE 2. *Age-adjusted death rates for eight alcohol-related events or conditions identified as the underlying cause of death in 44 rural Georgia counties, 1979-1985.*

two injury categories, suicides (14 per 100,000) and homicides (11.5 per 100,000), combined. The average age-adjusted death rates for motor vehicle accidents and suicide exceeded those for the Nation (20.4 and 11.5, respectively) and for the State of Georgia (25.5 and 11.9). The alcohol-related homicide rate in rural Georgia also exceeded that for the United States (9.1), but was less than the Statewide rate (12.7), the sixth highest in the Nation.

The average death rate from cirrhosis (8.9) was over twice that from the other four illness categories combined. This is similar to the pattern observed statewide and nationally, although the cirrhosis rate itself was somewhat lower than the State (10.6) and national (10.8) rates.

Deaths may result from the combined effects of one or more contributing causes with the primary underlying cause of death. Figure 3 presents age-adjusted rates for deaths in which an alcohol-related illness was cited on the death certificate, regardless of whether it was the underlying or a contributing cause. By including all deaths in which alcohol has been

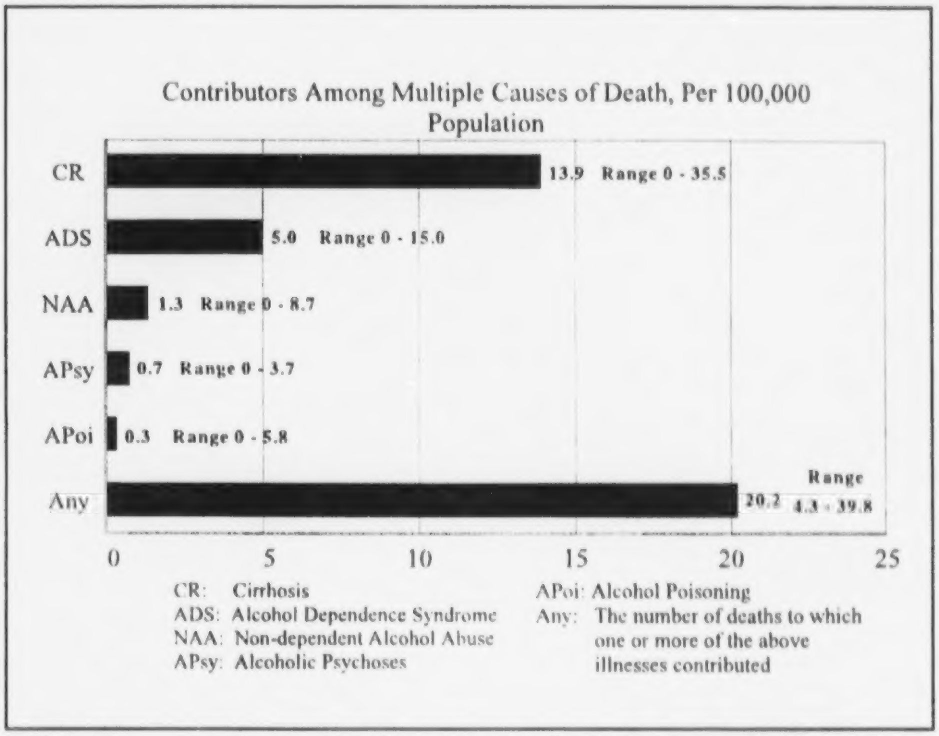

FIGURE 3. *Death rates for five chronic alcohol-related conditions identified as an underlying cause of death in 44 rural Georgia counties, 1979-1985.*

recognized to play a causal role, these data provide a more accurate picture of the full impact of alcohol on mortality (NIAAA 1991*b*).

It should be noted that more than one of the five illnesses shown in figure 3 may have been implicated in a single death, so some deaths have been counted several times. Therefore, the bottom bar in figure 3 presents the age-adjusted rate for all deaths in which there was citation of any one or more of the five alcohol-related causes.

When multiple causes of death are considered, the death rates for alcohol dependence syndrome, nondependent alcohol abuse, alcoholic psychosis, and alcohol poisoning double; and the rate for cirrhosis increases by more than 50 percent. Cirrhosis remains the major cause of death from alcohol-related illness.

The heterogeneity among rural areas, described earlier, is apparent in these data. Even though these rural counties are located in the same State, wide variation exists among them in alcohol-related mortality, as is evident in the ranges for death rates shown in figures 2 and 3. More realistic comparisons between rural Georgia and other areas on alcohol-related mortality should accommodate this intercounty variation.

Therefore, the death rates for individual counties in Georgia, based on any mention of an alcohol-related illness, were compared with State and national data. Figure 4 shows the number of rural Georgia counties at or above the 50th percentile in such deaths among counties nationwide. Twenty-five counties ranked in the top half for the Nation, and 19 ranked below. For a within-State comparison, all 159 counties in Georgia were ranked by number of alcohol-related deaths, and a median split was performed on the ranking. Nineteen of the rural counties fell in the top half of the distribution, and 25 fell in the lower (see figure 4). It should be noted that Georgia ranks sixth in the Nation for alcohol-related mortality.

Thus, it appears that, as a whole, rural Georgia experiences more alcohol-related mortality than does the Nation, but somewhat less than the State. However, the wide variability among these rural counties indicates a need for research focused on subpopulations at increased risk and that will describe factors and processes underlying that risk. Such foundational research can be critical for the development of effective intervention strategies.

A STUDY OF PREDICTORS OF ALCOHOL USE AMONG RURAL AFRICAN-AMERICAN ADOLESCENTS

It is generally assumed that young drinkers are not at risk for alcohol-related chronic health effects, with the possible exception of HIV transmission, but there has been very little research in this area. Although limited, available studies do suggest a number of potential health consequences from adolescent alcohol abuse, including eating disorders, nutritional deficiencies, liver damage, retardation of bone and muscle development, endocrine abnormalities that can affect the onset and course of puberty, and a diminution of general physical hardiness (Arria et al. 1991). Adolescence is a period of physical and psychosocial maturation, and possible alcohol effects on these developmental processes could result in risks for adolescents not experienced by adult drinkers.

It is clear, however, that adolescents are at risk for a range of acute health effects, especially motor vehicle and other accidents. Due to lack

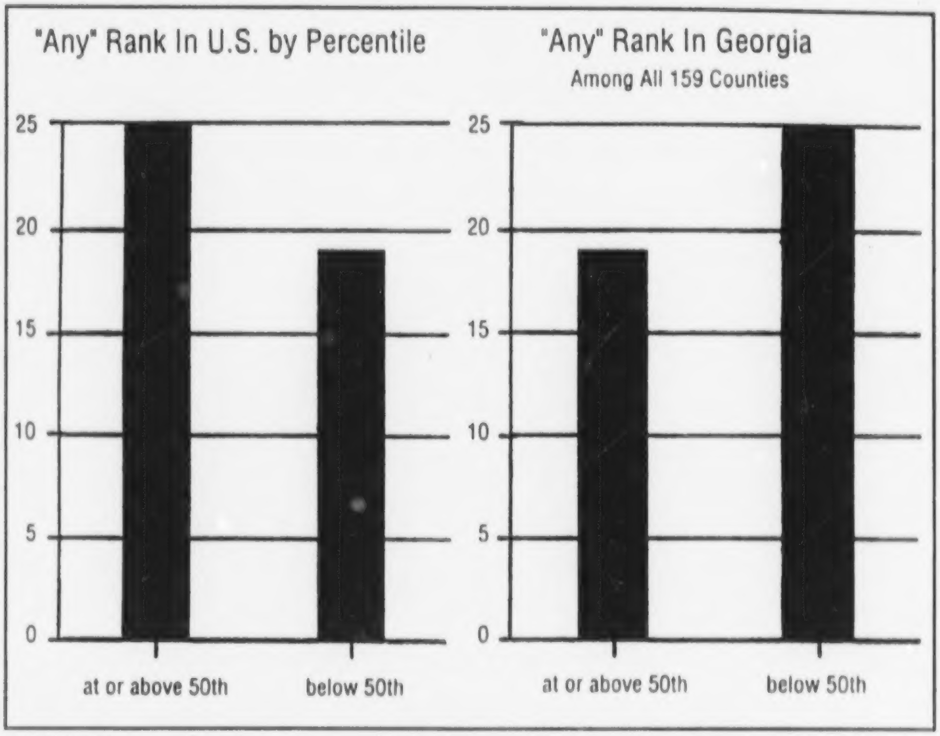

FIGURE 4. *Number of rural Georgia counties whose rate of deaths with an alcohol-related underlying or contributing cause fall above and below the median death rates for all U.S. and Georgia counties.*

of tolerance and inexperience, adolescents are more susceptible to alcohol-related impairment of driving than adults (NIAAA 1994*b*).

Alcohol-related unwanted pregnancy is clearly a major potential health consequence for adolescent females (in 1991, the birth rate for teenage girls aged 15 to 19 was 62.1 per 1,000 population (NCHS 1994*a*)). Equally important, young women who drink during their pregnancy place their infants at risk for FAS/FAE. The period when drinking is first initiated and early patterns of use and abuse become established is a critical juncture in individual drinking careers. Unrecognized physical and developmental effects in adolescence may have long-term health consequences. Disruption of psychosocial development and educational attainment have implications for future health and success. And the early initiation of a pattern of abusive drinking will hasten the development of chronic alcohol-related health problems.

Similarly, effective intervention to delay onset of alcohol use and prevent its abuse will have beneficial effects on immediate and future health. The development of such interventions will be facilitated by an understanding of the sociocultural context within which underage drinking emerges and of the key influences that promote or discourage alcohol misuse.

The first author is conducting ongoing research to identify some of the risk factors and processes that underlie early onset of alcohol use in a specific rural population—African-American adolescents living in areas that include the rural counties described above. Family processes are important determinants of alcohol practices by adolescents in the general population, including urban African-American youth (Barnes et al. 1995; Peterson et al. 1995), and the research described below focuses on this key domain of influence. In the general population, African-American youth do not initiate alcohol use as early as their white and Hispanic contemporaries (Johnston et al. 1994; NIAAA 1994*a*), but African-American men have higher prevalences of alcohol abuse and dependence (Williams et al. 1989) and experience disproportionately high rates of mortality from cirrhosis (Savage et al. 1994). Little is known about the rural African-American population, and the research described was undertaken to describe the nature and predictors of risk among these youth.

Many African-American families in rural Georgia live under conditions of severe, chronic environmental stress. Nevertheless, many of their children are, like those whom Garmezy (1976, 1981) described, "resilient," maturing into emotionally healthy, competent individuals despite these stressors. One possible reason for their resilience lies in the strength of their rural Southern families. Rural African-American families are more likely than those in urban areas to be headed by a married couple, even at poverty levels (Dietrich 1973; Hawkes et al. 1981). Married couples head nearly 70 percent of all African-American rural households with children under 18 (calculated from figures provided by the Census Bureau 1990). These families, as well as those that are headed by single parents (almost always mothers), often have strong extended kin networks that support family members in need (Hawkes et al. 1981), ties that may be more prevalent among rural than urban African-American families (Dietrich 1973; Dietrich and Grieger 1975; Donnenwerth et al. 1978). It appears, then, that many rural African-American families are extended, interconnected kinship networks that provide economic and instrumental assistance and cooperation (Tienda and Angel 1982), nurturance, socialization, and a cultural identity (Hawkes et al. 1981; Shimkin et al. 1978).

The Development of Self-Regulation and Adolescent Externalizing Behaviors in Rural African-American Youth

In the effort to prevent high-risk behaviors such as alcohol misuse among adolescents, few question the importance of information-based educational programs, typically offered through institutions such as the schools. Increasingly, however, professionals are beginning to recognize the importance of broader social and emotional factors in preventing the initiation of such behavior (Gayle and D'Angelo 1991; Schvaneveldt et al. 1990). The family is often an important influence in the development of attitudes and behaviors that reduce adolescents' involvement in risky behaviors (Adams et al. 1992; Gray and Saracino 1991; Lee and Goddard 1989; Macklin 1988).

Few studies have been conducted of the psychological processes that mediate the impact of family processes on adolescents' risk for alcohol misuse. Data for specific ethnic groups and youths living in rural areas are especially limited. In a review of the literature on family correlates of drug use and nonuse among adolescents, Lee and Goddard (1989) identified family characteristics positively associated with restricting substance use: family members' involvement with one another, shared decisionmaking and clearly explained rules, loyalty and unity, values and religious orientation, emotional closeness and support, open and clear communication, and the ability to cope and to solve problems.

Although these family characteristics have been identified as important to adolescents' avoidance of substance misuse, the mechanism of their influence is less well understood. In concrete terms, why and how are family processes associated with adolescents' involvement in or avoidance of alcohol misuse? In the model that guides this research, specific family processes are hypothesized to affect the development of self-regulation. Self-regulated youths are, in turn, hypothesized to control impulsive behavior in a variety of contexts. This hypothesis is derived from the work of Greenberger (1982) and of Steinberg and colleagues (1989), who found that differences in self-regulation differentiate academically, socially, and emotionally competent adolescents beyond differences attributable to social class or academic ability. The self-regulation hypothesis is also consistent with the literature that identifies social skills and personality strengths important in the avoidance of alcohol-related problems: personal control, decisionmaking skills, assertiveness, self-esteem, and the ability to communicate (Adams et al. 1992). These hypotheses regarding self-regulation are included within the model described below, and they will be tested as they relate specifically to rural African-American families.

Figure 5 presents an overview of the conceptual model that guides the research described below. In this model, family financial resources were measured using family per capita income, the family's annual income divided by the number of people in the household.

Low per capita income was postulated to be associated with more depressive symptoms and less optimism among parents. Parental mood in turn was proposed as the indirect link through which financial resources would influence parental co-caregiving relationships. The parental co-caregiving construct included three dimensions hypothesized to influence youth outcome: caregiver communication and instrumental support, caregiver conflict over child-rearing issues, and marital interaction quality. Parental co-caregiving functions optimally when parents display congruence on child-rearing practices, communicate with one another about child rearing, and support one another instrumentally on child-rearing tasks (see Belsky 1990). The ways in which spouses relate to one another in the child's presence are also an important aspect of co-caregiving. Harmonious and communicative interaction styles promote child competence and maturity, whereas conflicted styles are associated with children's academic difficulties and adjustment problems (Grych and Fincham 1990). Parents who are less depressed and more optimistic would be more likely to communicate with one another about child-rearing issues and to provide one another with instrumental and emotional support on child-rearing tasks.

Low co-caregiver communication, low instrumental support, and conflicted co-caregiving relationships were predicted to affect indirectly youths' externalizing behaviors by making it more difficult for youths to develop self-regulating competencies. Externalizing problems served as a focus because this behavior forecast involvement with alcohol and the development of alcohol problems. Given the ages of the youths in the sample (9 to 12 years), no appreciable involvement in drinking was anticipated. Youths who display other externalizing problems, however, are at risk for alcohol use, drunk driving, and alcohol problems.

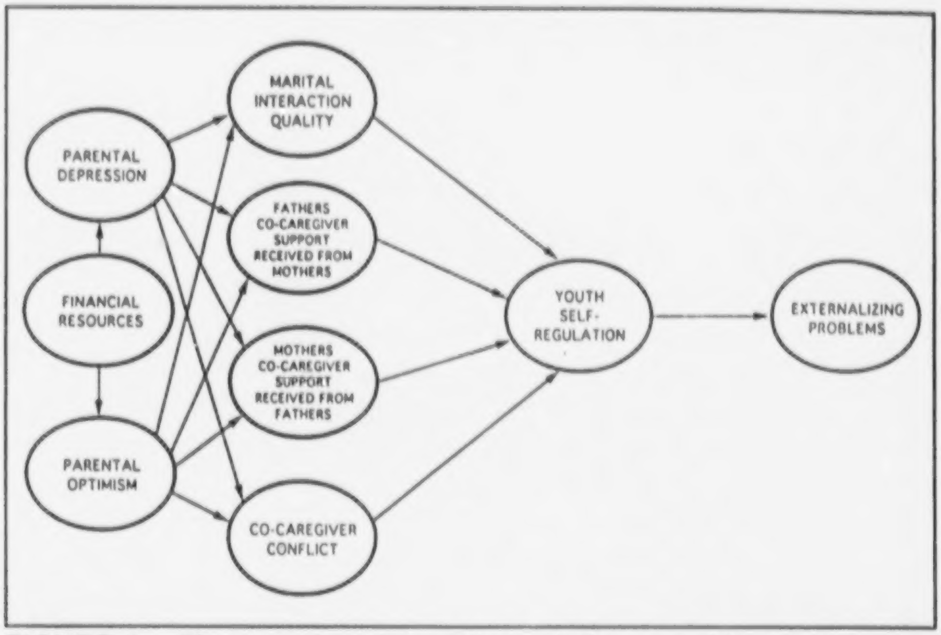
MARITAL INTERACTION QUALITY
PARENTAL DEPRESSION
FATHERS CO-CAREGIVER SUPPORT RECEIVED FROM MOTHERS
FINANCIAL RESOURCES
YOUTH SELF-REGULATION
EXTERNALIZING PROBLEMS
MOTHERS CO-CAREGIVER SUPPORT RECEIVED FROM FATHERS
PARENTAL OPTIMISM
CO-CAREGIVER CONFLICT

FIGURE 5. *Theoretical model predicting influences of family factors on adolescent alcohol use.*

Subjects

Ninety African-American families with married parents and a 9- to 12-year-old first-born child (48 females and 42 males) were recruited from nonmetropolitan counties in Georgia and South Carolina. This sample was drawn from rural areas with populations of less than 2,500. Only counties in which 25 percent or more of the population was African-American were sampled in order to ensure that a viable African-American community existed within the county. Families were recruited through schools, churches, and community contacts. The families represented an economic cross-section of the population under study; total family annual income ranged from $2,500 to $57,500, and per capita income ranged from $357 to $13,500.

Development of Measures With the Assistance of Community Members

The accurate assessment of the population under study was a concern because most instruments used to evaluate family processes and individual outcomes have been developed for use with, and standardized on, white, middle-class families. Consequently, the available measures may not validly describe family dynamics among rural African-Americans.

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The researchers dealt with this issue through the formation of focus groups composed of rural African-American community members.

The communities from which the study participants were recruited are served by two State agencies housed on the University of Georgia campus. The Energy Education Program and the Expanded Food and Nutrition Program employ rural community members as peer agents who visit their neighbors' homes as educators and advocates in areas such as application for energy assistance, energy conservation, and basic nutrition. These agents are themselves African-American parents, representative of the families included in the study. Some agents recommended other African-American community leaders for participation. Two focus groups, each with 20 members, were formed that included people from throughout Georgia. The participants enthusiastically endorsed the research project and its hypotheses and encouraged the researchers to go forward with the study.

The groups then addressed two measurement issues, the first of which concerned the development of valid self-report instruments. Each group member rated each instrument that was to be used on a five-point Likert scale ranging from (1) not appropriate for rural African-American families through (3) appropriate to (5) very appropriate. Those instruments that attained a mean rating of at least 3.5 were retained. For these scales, the focus groups reviewed each item on each scale and suggested wording changes, as well as the deletion of items that they perceived as unclear or irrelevant to rural African-Americans.

The second issue concerned the planned videotaping of family interactions. In past projects the researchers had found that videotaping interactions was essential to the close study of family relationships. The focus group suggested that this procedure be made as nonthreatening as possible by recording no interactions involving finances or other sensitive information. From a list of activities in which families have been videotaped in past studies, the group selected game playing as the context that the families would consider most acceptable. In addition, during the first home visit the project staff clearly explained the videotaping procedure and the reasons for its use, strongly emphasizing its confidentiality. The staff also gave particular attention to establishing rapport and putting the families at ease, a process that was emphasized throughout the project. The majority of the families freely cooperated with the taping, and only two families dropped out of the study because of it.

Procedure

Three home visits, each lasting 2 to 3 hours, were made to each family, arranged as closely to a week apart as the families' schedules allowed. African-American students visited the families in teams of two, one male and one female, in order to give both parents someone with whom they could identify and to whom they could comfortably relate. During home visits, therefore, the male researcher worked primarily with the father and the female researcher with the mother and child.

Measures

Family Financial Resources. A single indicator was used as a measure of financial resources, each family's per capita income. Per capita income was operationalized as the family's total annual income divided by the number of people living in the household. The total family income was derived by averaging the husband's and wife's reports, which were found to correlate significantly ($r = 0.71$; $p < 0.001$). The two reports were averaged to create a more reliable index of family financial resources.

Parental Depression. Depression was assessed using a single indicator composed of 16 items from the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977), which is widely used with community samples. The CES-D depression subscale contains items that were rated on a four-point Likert-type scale indicating how often in the last week the individual experienced the various symptomatic events, ranging from "rarely or none of the time (less than 1 day)" to "most or all of the time (5 to 7 days)." A sample of the items included: "How often did you feel like not eating; had a poor appetite?"; "How often did you feel that everything you did was an effort?"; and "How often did you feel that you could not shake off the blues?" The Cronbach alphas for mothers' and fathers' reports were 0.87 and 0.88, respectively.

Parental Optimism. Optimism was assessed through the use of two indicators: mothers' and fathers' scores on the optimism subscale of the CES-D, and Rosenberg's Self-Esteem Scale (Rosenberg 1965). The optimism subscale of the CES-D contains four items that were rated on a four-point Likert-type scale, indicating how often in the last week the individual had experienced a given event: (1) "How often did you feel you enjoyed life?"; (2) "How often were you happy?"; (3) "How often did you feel hopeful about the future?"; and (4) "How often did you feel you were as good as other people?" Cronbach alphas for mothers' and fathers' were 0.59 and 0.64, respectively.

The Rosenberg Self-Esteem Scale contains 10 items that are rated on a five-point Likert-type scale, ranging from completely false to completely true. The scale includes items such as: "I feel that I'm a person of worth, at least on an equal basis with others"; "I take a positive attitude towards myself"; and "On the whole, I am satisfied with myself." The Cronbach alphas for mothers' and fathers' reports were 0.78 and 0.82, respectively.

The factor loadings of the two indicators of parental optimism (CES-D optimism subscale score and the Rosenberg scale score) were high and the saturation was moderately high (0.79 and 0.92 for fathers, 0.68 and 0.92 for mothers). These data support previous research indicating considerable overlap between optimistic outlooks and positive views of the self (Scheier and Carver 1985).

Co-Caregiver Support Received from Spouse. Co-caregiver support was assessed independently by fathers and mothers, using two indicators: the communication and instrumental support subscales of Ahrons' (1981) Quality of Coparenting Scales (revised). On this instrument, a five-point Likert-type format is used to indicate the frequency of agreement on parenting issues. Possible responses ranged from never to always. A sample of the six communication items included "How often do you and your spouse talk about your child's accomplishments and progress?" and "How often do you and your spouse discuss school or medical problems together?" Estimates of internal consistency ranged from 0.81 for mothers to 0.82 for fathers.

The items used to indicate co-parenting instrumental support were: (1) "When you need help with this child, how often do you go to your spouse for help?"; (2) "Would you say that your spouse is a help to you in raising your child?"; and (3) "Would you say you are a help to your spouse in raising your child?" Estimates of internal consistency ranged from 0.55 for mothers to 0.60 for fathers.

Co-Caregiver Conflict. Co-caregiver conflict was assessed independently by mothers and fathers, using two indicators: the conflict subscale of Ahrons' (1981) Quality of Coparenting Scales (revised) and the O'Leary Porter Scale (OPS; Porter and O'Leary 1980). Estimates of internal consistency ranged from 0.60 for mothers to 0.68 for fathers.

On Ahrons' co-parenting conflict scale, a five-point Likert-type format is used to indicate frequency of agreement with respect to parenting issues. Possible responses ranged from never to always. The scale includes three items: (1) "When you and your spouse talk about how to raise the child, how often is the conversation hostile or angry?"; (2) "Do you and your spouse have big differences of opinion as to how to raise your child?"; (3) "When your child complains about your spouse, how often do you usually agree with your child?"

To assess frequency of interparental conflict in the presence of children, mothers and fathers completed the OPS. The OPS is a 10-item scale with a five-point Likert-type format that ranges from never/very little to a lot. A sample of the items includes: "How often has your child heard you and your spouse argue about the wife's duties, such as housework or her job?"; "How often do you complain to your spouse in front of your child about the things they do?"; and "How much do you argue with your spouse in front of your child?" Estimates of internal consistency ranged from 0.77 for mothers to 0.87 for fathers.

Marital Interaction Quality. Marital interaction quality was assessed using four observed behavioral indicators: harmony, engagement, communication, and warmth. African-American student assistants received a minimum of 10 hours of training in observational coding, which included study and discussion of the coding category definitions and observation of videotaped family interactions. The coders worked in teams of two, viewing the videotapes and independently rating the interactions on the following dimensions:

- The Conflict-Harmony scale, ranging from (1) conflicted (relationships among the family members are hostile and tense, with frequent displays of negative verbal and nonverbal behavior) to (7) harmonious (relationships are warmly supportive; dialog is relaxed; members clearly work together to resolve issues; tone is friendly).

- The Engagement scale, ranging from (1) not engaged (family members do not speak to one another or interact nonverbally) to (7) engaged (family members frequently talk to each other and interact nonverbally).

- The Communication scale, ranging from (1) not at all characteristic (family members rarely explain or clarify their remarks to make themselves understood) to (5) highly characteristic (family members virtually always explain and clarify their remarks to promote understanding).

- The Warmth scale, ranging from (1) not at all characteristic (family members rarely or never display examples of warmth and involvement) to (5) highly characteristic (family members actively display high levels of concern, support, praise, encouragement, touching, eye contact, etc.).

The codes were designed to focus on the interacting couple as a dyad, in order that the couple, not the individuals, would be the focus of the analyses. Because couple interactions took place in two task settings, the scores for each setting were averaged across tasks to increase the reliability of the assessments (Epstein 1979). These coders, who also worked as home visitors, did not rate any families whose homes they had visited.

Reliability was calculated using split-half, Spearman-Brown coefficients, computed for each possible pair of observers. Mean agreement scores were calculated across subjects for each pair, and across all pairs of observers. Estimates of reliability between raters for each code were: conflict-harmony scale = 0.86; engagement scale = 0.96; communication scale = 0.97; warmth scale = 0.87.

Youth Self-Regulation. Self-regulation was assessed using the self-control subscale of the Children's Self-Control Scale (Humphrey 1982). This subscale contains five items that were rated on a five-point scale by mothers, fathers, and teachers. The items were: (1) thinks ahead of time about the consequences of his or her actions, (2) plans ahead before acting, (3) pays attention to what he or she is doing, (4) works toward goals, and (5) sticks to what he or she is doing, even on long, unpleasant tasks, until finished. The Cronbach alphas for mother, fathers, and teachers were 0.80, 0.71, and 0.92, respectively.

Externalizing Problems. Externalizing behavior patterns are characterized by angry, disruptive behavior. Mothers, fathers, and teachers completed the 10-item conduct disorder subscale from the Revised Behavior Problem Checklist (RBPC; Quay and Peterson 1987). The Cronbach alphas exceeded 0.90 for both parents and teachers in this sample. Parents and teachers also completed the antisocial behavior subscale from the Self-Control Inventory (SCI; Humphrey 1982).

Cronbach alphas for parents exceeded 0.70, and for teachers, 0.90. The teacher-assigned classroom conduct grade (A, B, C, D, F) was included as an additional indicator.

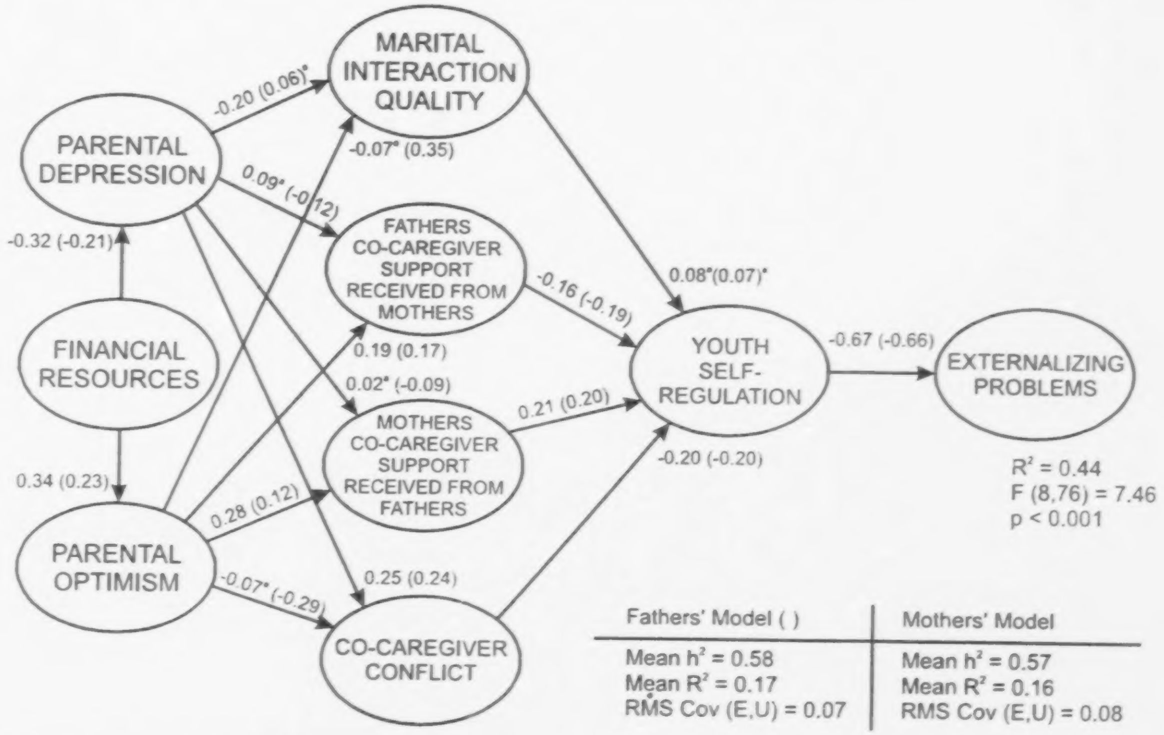
Results

Latent variable path analysis with partial least-squares estimation procedures (LVPLS) was used to examine the hypothesized relations depicted in the theoretical model presented in figure 5 (Lohmoeller 1989; Lohmoeller and Wold 1984). LVPLS is part of a family of statistical procedures known as component analyses, of which principal component analysis and canonical correlation are most well known.

Structural equation modeling with partial least squares was developed by Wold (1975; Joreskog and Wold 1982) for situations in which data do not meet the highly restrictive assumptions that underlie maximum likelihood techniques such as LISREL (see Falk and Miller 1991; Fornell and Bookstein 1982; Ketterlinus et al. 1989). The advantage of LVPLS over other regression analyses is that it allows the assessment of both direct and indirect effects, both of which are included in hypotheses used in this research.

Several statistics are generated by this analysis (see Falk and Miller 1991). First, goodness-of-fit indices assess the extent to which the model reproduces the actual covariance matrix. The coefficient RMS COV (EU), which stands for the root mean square of the covariance between the residuals of the manifest and latent variables, is an index of the overall model's fit with the raw data. This coefficient would be 0 in a model that describes with complete accuracy the relationships between the variables. A coefficient above 0.20 indicates a poor model, and a coefficient of, for example, 0.02 indicates a superior one. The two models presented here achieved coefficients of 0.07 using mothers' data and 0.08 using fathers' data. Second, the mean of the squared multiple correlations of latent variables is the arithmetic average of the multiple R squares for all the endogenous variables.

The findings presented in figure 6 indicate that financial resources have a negative direct effect on parental depression, and a positive effect on parental optimism. Within the context of the model relationships, greater family resources predicted lower parental depression levels and higher parental optimism levels. An indirect effect also emerged between family resources and the parent co-caregiving constructs, through parental


MARITAL INTERACTION QUALITY
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PARENTAL OPTIMISM
CO-CAREGIVER CONFLICT
YOUTH SELF-REGULATION
EXTERNALIZING PROBLEMS
-0.20 (0.06)ᵃ
-0.07ᵃ (0.35)
0.09ᵃ (-0.12)
-0.32 (-0.21)
0.34 (0.23)
0.19 (0.17)
0.02ᵃ (-0.09)
0.28 (0.12)
-0.07ᵃ (-0.29)
0.25 (0.24)
-0.16 (-0.19)
0.21 (0.20)
0.08ᵃ(0.07)ᵃ
-0.20 (-0.20)
-0.67 (-0.66)
R² = 0.44
F (8,76) = 7.46
p < 0.001
Fathers' Model ( )
Mean h² = 0.58
Mean R² = 0.17
RMS Cov (E,U) = 0.07
Mothers' Model
Mean h² = 0.57
Mean R² = 0.16
RMS Cov (E,U) = 0.08

NOTE: "a" indicates a predicted path that did not account for sufficient variance (see Falk and Miller 1992)

FIGURE 6. *Results of latent variable path analysis with partial least-squares estimation procedure predicting adolescent externalizing problems.*

depression and optimism. In the theoretical model, it was postulated that family financial resources would indirectly affect parental co-caregiving and marital interaction quality through their influence on parents' depressed mood and optimism. These findings are consistent with such a model and support some of the hypothesized pathways.

Maternal depression was negatively linked with marital interaction quality and positively linked with co-caregiver conflict. Greater paternal depression was linked with lower levels of co-caregiving support received from mothers and with higher levels of co-caregiving conflict. Parental optimism also mediated relationships between family financial resources and co-caregiving relationship quality. For both parents, higher optimism levels were associated with greater maternal and paternal co-caregiver support. Paternal optimism was also positively related to higher marital interaction quality and lower levels of conflict, whereas maternal optimism was not. While not all hypothesized pathways were significant, these analyses generally support the role of parental depression and optimism as mediators between family financial resources and co-caregiving relationships.

It was also hypothesized that co-caregiving relationships would indirectly affect the development of externalizing problems through youth self-regulatory competence. Consistent with the theoretical model, parental co-caregiving relationships were related to youth self-regulatory competence, which in turn negatively affected externalizing problems. Contrary to the authors' predictions, fathers' reports of co-caregiver support from mothers was negatively linked with self-regulation. Because data reported here are contemporaneous, it is plausible that less self-regulated youth elicit greater caregiving involvement from their mothers. Marital interaction quality was not related to youth self-regulation.

Two alternative models were also tested. The first added direct paths from family financial resources to the co-caregiving relationship constructs. Consistent with the hypothesized mediational process model, adding these direct paths did not improve the fit of the model, using either the mothers' or fathers' data (adding these paths, either singly or as a group, did not decrease the RMS COV[E,U] or increase the R^2 of the endogenous variables). The second model included only paths from family financial resources to the endogenous variables. The mean R^2 for the endogenous variable for this model was 0.12, compared to 0.44 for the proposed theoretical model. Deleting the hypothesized mediational paths greatly reduces the explanatory power of the data.

Overall, the analyses reported here support the proposed mediational model of relationships among family economic resources, family processes, and the development of externalizing problems that place rural youth at risk for alcohol problems. Greater family resources predicted lower parental depression levels and higher parental optimism levels. These, in turn, influenced parental co-caregiving support and conflict. Not all hypothesized pathways were significant for both mothers and fathers. Generally, however, parental depression was associated with increased conflict and decreased support, whereas optimism was associated with decreased conflict and increased support. As predicted, parental co-caregiving relationships were related to youth self-regulatory competence, which in turn negatively affected externalizing problems.

The analyses reported here are based on data collected when the participating youth were 9 to 12 years old, and significant alcohol use had not yet emerged. These youth will soon be entering their teenage years and will be exposed to both more opportunities and pressures to drink. Future waves of data collection in this ongoing research will be able to test the final hypothesized relationship between externalizing problems and alcohol use.

Recommendations for Future Research and Intervention

The research reported here has focused on factors underlying the onset of alcohol use by rural African-American youth. If the model presented continues to be supported by future waves of data collection when youth in this cohort are in their higher risk adolescent years, it will suggest some avenues for intervention research. The importance of family factors in adolescent decisions regarding substance use has been found in research with a variety of adolescent populations. Intervening with families that are economically stressed, as are many of the families in this study, will be especially challenging.

The methodology used in this study was designed in collaboration with rural African-Americans. Historically, community members have not been consulted in the development of assessment strategies. Although such input does not directly affect the psychometric properties of self-report instruments or interrater reliabilities for observational assessments, it can improve the appropriateness and acceptability of assessment procedures as perceived by participant families and the meaningfulness of resultant data. Family researchers are encouraged to solicit feedback from their target populations concerning research methods and intent.

CONCLUSION

While the available data on health consequences of alcohol use in rural areas are very limited, it is apparent that these areas are not protected from the adverse outcomes of drinking that occur in the general population. Further, there is considerable variability among rural areas in the incidence of alcohol-related health problems, and some areas are at very high risk. Reliance on national-level data will not allow adequate description of the nature and distribution of alcohol-related health problems in rural America. More locale-specific information on the health burden from alcohol is necessary to target areas at greatest need.

Additional research is also needed to understand the factors underlying alcohol use and abuse in different kinds of rural communities for use in developing effective interventions and targeting them appropriately. Programs may need to be tailored to the specific needs and characteristics of rural communities, taking into consideration the wide differences that can exist among them.

The research on underlying factors presented here focused on youth. However, alcohol problems are experienced throughout the life span; and research is also needed on adult alcohol-related problems in rural areas. Groups of special interest include women of child-bearing age, parents, specific occupational categories, and the elderly.

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ACKNOWLEDGMENT

Preparation of this monograph was supported by National Institute on Alcohol Abuse and Alcoholism grant number 5 R01 AA09224-02.

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Health Consequences of Rural Illicit Drug Use: Questions Without Answers

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Previous chapters in this monograph have noted a general lack of epidemiological data concerning illicit drug use in rural America, a lack that extends to the health consequences of substance misuse behaviors among rural dwellers. Urban population studies indicate that the major health risks associated with illicit drug use are hepatitis (users are 12 times as likely as nonusers to contract hepatitis C), tuberculosis, sexually transmitted diseases, various other bacterial infections, and human immunodeficiency virus (HIV) infection.

Suppression of the immune system, inadequate nutrition, and other lifestyle factors are typically cited as the reasons for these health outcomes. However, characteristics of the individual's environment may also play a role. For example, health care facilities and personnel are typically less available in rural than in urban areas. Rates of substance misuse-related health conditions may vary with both availability of health care and with the rate of substance misuse in the community. What few rural data are available indicate that geographic region may also influence disease rates, although the reasons for this variation are unclear.

This chapter presents an overview of health problems related to illicit drug use in rural areas. Findings from research conducted in the Anchorage, Alaska area are compared with national data and, where possible, with U.S. rural data. The relationships between drug abuse and HIV infection, hepatitis, and pulmonary problems, and evidence of a possible network of disease transmission are discussed with special emphasis being placed on the implications for rural dwellers. Methodological problems and recommendations for future research are also presented.

ANCHORAGE, ALASKA

Alaska presents special problems for the study of drug use. Alaska has the reputation of high rates of alcohol use, but many people are unaware of the very high rates of drug use (Fisher and Booker 1990).

One reason for the lack of information about drug use in Alaska is that Alaska is excluded from the major national surveys of drug use such as the National Household Survey on Drug Abuse (Research Triangle Institute 1991). Moreover, the State is not listed in the National Drug Abuse Treatment Unit Survey (NDATUS). This dearth of information exists even though Alaska spends more per capita on narcotic law enforcement than any other State in the Nation.

Anchorage, the major city in Alaska, has a combined city-borough form of government known as the Municipality of Anchorage (MOA), an area of 1,958 square miles with a population density of 132 persons per square mile. The 1995 population of Alaska is 615,900; 41.9 percent of the State's population (257,780) lives in Anchorage (MOA 1995).

Despite its urban characteristics, Anchorage differs from other seemingly similar cities in the contiguous United States in several respects. First, it is the major city in a State that is 2.18 times larger than Texas. The next largest city in Alaska is Fairbanks, with a population of 84,380. Thus, Anchorage is, by far, the largest city in a State characterized by vast unpopulated areas. Nonetheless, compared to the major cities of other States, Anchorage is relatively small in population. Second, Anchorage has grown rapidly in the past 20 years. Census data for 1970, 1980, and 1990 put the population of Anchorage at 126,385, 174,431, and 226,338, respectively. While much of this growth can be attributed to in-migration from other States and countries, a substantial amount is migration from rural areas of Alaska. Third, the Matanuska-Susitna Borough, which is the next population center near Anchorage, has a population of 50,601, making Anchorage the focus of retail, health care, and other human services for a huge rural area. Finally, for Native Alaskans and others who have been disenfranchised by their home communities due to substance abuse, the availability of free shelter and food in Anchorage makes it a desirable site for relocation. Thus, although the population of Anchorage is not rural, it does include many individuals who come from rural areas.

ANCHORAGE, ALASKA SAMPLE

The data presented in this chapter come from research funded by the National Institute on Drug Abuse (NIDA) under a cooperative agreement for acquired immunodeficiency syndrome (AIDS) community-based outreach/intervention research. The grant, titled "IVDUs (intravenous drug users) Not in Treatment in Alaska," is the first NIDA research grant in Alaskan history. Data collection began in 1991. To be eligible for inclusion, a subject had to: (a) be 18 years of age or older, (b) have not been in substance abuse treatment for at least 30 days before intake, (c) test positive for cocaine metabolites, morphine, or amphetamine on a urine test, and/or have visible track marks.

The Risk Behavior Assessment (RBA) was the data-collection instrument used at intake. The RBA has been demonstrated to have good test-retest reliability (Dowling-Guyer et al. 1994; Fisher et al. 1993*b*; Needle et al., in press; Weatherby et al. 1994). Phlebotomy for HIV testing and other lab tests were also performed.

Sampling was conducted according to a targeted sampling plan guided by the Watters and Biernacki (1989) model. Approximately 30 to 35 new subjects were recruited each month, starting in November 1991. New subject recruitment is ongoing. Not all analyses used all subjects. The sample design provided for an overrepresentation of blacks and Alaska Natives and an underrepresentation of whites and Asians (see figure 1).

Men comprise 68.6 percent of the sample and the median age is 34 years. This compares with 51.4 percent male and a median age of 29.8 years for the MOA. Figure 2 compares the educational attainment of the sample with that of the MOA population and indicates that a higher proportion of the sample falls into the less than high school, general equivalency diploma (GED), and high school graduate categories, whereas lower proportions fall into the some college and college graduate categories.

HIV INFECTION

Several reports on HIV infection and risk behaviors among rural residents have appeared in the recent research literature. A synthesis of these

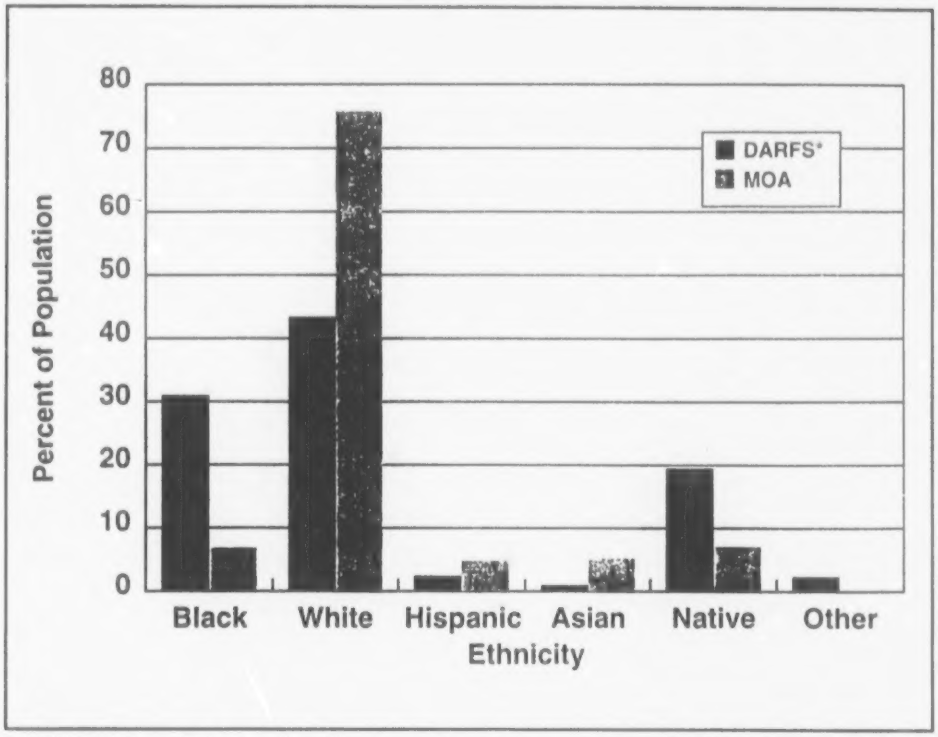

FIGURE 1. *Ethnic distribution of sample compared with Municipality of Anchorage (MOA).*

KEY: * = Drug Abuse Research Field Station.

findings points to some interesting regional differences. For example, data from the southern region indicates that compared to other women tested for HIV, those who were infected had a greater number of sex partners, had used smokable cocaine (Ellerbrock et al. 1991), and were likely to be African-Americans (Bartlett et al. 1993). In fact, the rate of AIDS cases associated with injection drug use was 19 times higher among African-American than among white women (Whyte and Carr 1992). Interestingly, rural HIV positive women were likely to have acquired the disease while living in AIDS epicenters and to have then moved to rural areas (Cohn et al. 1991). Reports comparing urban Miami, Florida to rural Georgia found urban and rural crack using women were similar on their risk for HIV infection (Forney et al. 1992). A review article on HIV infection in rural areas of the country concluded that HIV infection among women who trade sex for drugs or money is more evident in the southeast portion of the country (Berry 1993).

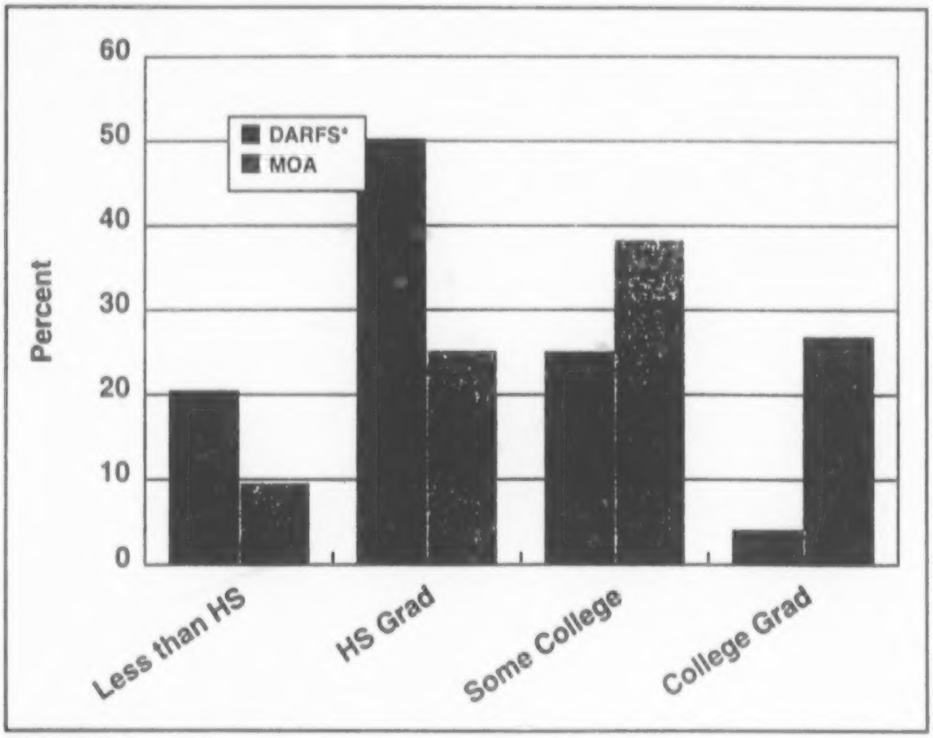

FIGURE 2. *Educational attainment—age 25 and older.*

KEY: * = Drug Abuse Research Field Station.

In contrast, women in the Western region have shown a somewhat different pattern. Araba-Owoyele and colleagues (1993) found that AIDS cases among heterosexual injection drug users in rural areas of California are more likely to be white or Hispanic rather than black. Tucker and colleagues (1991) found that rural western areas of the country are increasingly affected by HIV; transportation and housing are major difficulties.

Berry (1993) found that the epidemic among gay or bisexual men is strongly evident in rural areas of the country. For example, gay men in North Carolina were likely to have been infected while residing in North Carolina rather than in AIDS epicenters (Cohn et al. 1991). This is consistent with the Alaskan data. Among drug users, it was found that those who are gay were significantly more likely to be HIV positive (5/13 = 38 percent) than were heterosexual (11/1,176 = 0.01 percent) drug users ($z = 11.68$, $p < 0.01$), and the same held true for drug users who are bisexual (6/58 = 10 percent, $z = 6.00$, $p < 0.01$).

Conway and colleagues (1992) compared American Indian/Alaska Native (AI/AN) serum specimens from 58 prenatal and sexually transmitted disease (STD) clinics and found that while the rate of HIV infection among pregnant women was similar for urban versus rural clinics, the STD clinic specimens showed significantly higher rates for the urban than the rural clinics. Metler and colleagues (1991) have shown that the rate of increase among the AI/AN group is extremely high and that this group has high rates of STDs and drug abuse.

The alkyl nitrites (a group that includes amyl nitrites, butyl nitrites, and isopropyl nitrites) is a class of drugs that is highly associated with HIV infection. These drugs, sometimes known as "poppers," have been used since the 1960s and are associated with high-risk sexual behaviors (Haverkos 1988) and self-perception of being at risk for AIDS (Fisher et al. 1992). Sales of alkyl nitrites are illegal according to Federal law; however they are still widely sold at adult bookstores in several States, including Alaska (Fisher 1993). Alkyl nitrites may be more available in rural States because of a lack of Federal regulatory presence. Additional studies are needed to determine the extent of this form of drug abuse in rural areas. Nitrites may need to be included in prevalence surveys conducted in rural areas, and physicians treating people with AIDS may need to assess the extent of nitrite use and make a determination of the likelihood of Kaposi's sarcoma (Haverkos 1988).

HEPATITIS B

Hepatitis B virus (HBV) is a public health problem in Alaska, the rest of the United States, and throughout the world. The U.S. experiences 30,000 new infections each year, and 300 million chronically infected persons are believed to exist internationally (Shapiro and Margolis 1990). Parenteral drug use is one of the most frequently reported methods of transmission for HBV; a 42 percent increase of HBV associated with drug use has been reported since 1984 (Metropolitan Insurance Companies 1990). Methamphetamine and cocaine have been reported as the two drugs of choice for IVDUs infected with HBV (Centers for Disease Control 1988, 1992). Zeldis and colleagues (1992), however, found heroin to be highly associated with HBV prevalence. Injection drug users (IDUs) who are not in treatment warrant attention because they comprise the majority of IDUs nationwide (Lampinen et al. 1989), and engage in more high-risk behavior than those in treatment, at clinics, or who are incarcerated (McCusker et al. 1990).

Hepatitis B risk profiles based on self-report data from Anchorage, Alaska were compared with profiles obtained from 15 additional U.S. sites. The prevalence of HBV among the Alaska participants was 14 percent (101/714). Two-thirds of those positive for HBV were white men, white women, and Alaska Native women. The risk profile for Alaska men (N = 483) included: (a) using needles to inject drugs in the past 30 days (OR = 2.6), (b) a greater number of injection episodes involving heroin or nonprescription methadone in the past 30 days (OR = 1.6), and (c) ever having used other opiates (OR = 5.2) such as hydromorphone. The risk profile for Alaska women (N = 226) included: (a) ever trading sex for drugs (OR = 2.4) or money (OR = 1.6), (b) using needles to inject drugs in the past 30 days (OR = 3.0), (c) total number of injection episodes involving any drug in the past 30 days (OR = 1.1), and (d) num-ber of sex partners who had injected drugs in the past 30 days (OR = 1.4).

The HBV prevalence in the national sample was 16 percent (1,236/7,695), with a range of 8 percent to 25 percent among the sites. The risk profile for men nationally (N = 4,821) included: (a) ever using heroin (OR = 2.0), amphetamines (OR = 1.9), or nonprescription methadone (OR = 1.4); (b) using needles to inject drugs in the past 30 days (OR = 1.8); (c) ever being told they had AIDS/HIV (OR = 1.8); (d) ever being in drug treatment or detoxification (OR = 1.6); (e) years of life spent in jail (OR = 1.03); and (f) number of times they were told they had gonorrhea (OR = 1.04). The risk profile for women nationally (N = 2,121) included: (a) ever using heroin (OR = 1.7) or amphetamines (OR = 1.5), (b) ever being in drug treatment or detoxification (OR = 1.8), (c) using needles to inject drugs in the past 30 days (OR = 1.7), and (d) ever being in methadone maintenance (OR = 1.6).

The Anchorage and national prevalences of HBV were quite similar. The risk profiles for men and women in both the Anchorage and the national sample indicated that using needles in the 30 days before intake was a primary risk factor for a positive HBV history. For Alaska women, three out of five risk factors were associated with sexual behavior, whereas the national data for the other women indicated only drug use variables as risk factors. The only risk factor for men suggesting sexual transmission was how many times men in the national sample had been told they had gonorrhea.

HEPATITIS C

Hepatitis C virus (HCV) is responsible for the majority of non-A, non-B (NANB) hepatitis in the United States. Approximately 50 percent of people with hepatitis C develop chronic liver disease. Symptoms may include nausea, vomiting, anorexia, abdominal discomfort, and jaundice (Schloss and Beller 1994).

This virus is usually transmitted through injection drug use (including blood transfusions and dialysis), although sexual transmission has also been documented. Data from 297 members of the Alaska sample tested for HCV found that 42 percent were infected and that the major risk factor was injection drug use. For every time participants injected drugs within the past 30 days they were 12.8 times more likely to be anti-HCV positive (Orr et al. 1994). An additional correlate was ever having been in drug treatment.

RESPIRATORY AILMENTS

A variety of respiratory problems have been reported in the literature as being associated with cocaine smoking (Laposata and Mayo 1993; Meisels and Loke 1993); these include respiratory symptoms, pulmonary hemorrhage, pulmonary edema, asthma, pulmonary barotrauma, thermal airway injury, hypersensitivity reactions, and interstitial lung disease. However, it is likely that these problems are multifactorial or idiosyncratic. Even though the collective literature fails to reveal a clear picture of the symptoms diagnostic of cocaine use, it is predicted that the spectrum of cocaine-induced pulmonary disease will increase as the use of cocaine increases. For example, Kline and Hirasuna (1990) reported a case study of pulmonary edema that, after excluding the effect of adulterants, appeared to be due exclusively to the cocaine itself. Crane and colleagues (1991) reported an outbreak of tuberculosis among crack cocaine users for whom transmission was, in part, blamed on the conditions under which the drug was smoked. That is, cocaine smokers often close off ventilation at the smoking site to avoid detection. Having a group of people inhaling and exhaling hot smoke in close proximity to one another may facilitate transmission of a multitude of airborne diseases, including tuberculosis.

Klinger and associates (1992) reported a case of a woman who had large amounts of carbonaceous material in her lungs after cocaine smoking. Her other symptoms included cough and fever, and pulmonary infiltrates were found. The results from another research group may illuminate some of these findings. After controlling for the smoking of other substances, Tashkin and colleagues (1992) concluded that cocaine smoking produces: (a) cough, black sputum, and chest pain; (b) obstructive ventilatory abnormalities in the large airways; and (c) impairment in the diffusing capacity of the lung. Moreover, these effects can be attributed to the inhaled cocaine itself, rather than to the characteristics of the smoking (Khalsa et al. 1992).

METHODOLOGICAL ISSUES

Several methodological issues warrant special consideration when undertaking substance abuse and health research. Two of the most important are understanding local drug terminology and the validity of self-reports. A rural-relevant discussion of these issues is presented.

Drug Terminology

The use of a smokable form of cocaine was popularized by drug users in large urban areas in the 1980s. The mass media used the term crack to describe this highly detrimental and instantly addictive drug. For many drug users, especially those in rural areas, these messages actually preceded the introduction and use of smokable cocaine and may have precipitated a change in terminology for it (Ouellet 1993). Cocaine smokers not only call the substance crack, but also rock, ready-rock, or freebase (Cagle et al. 1993; Ouellet 1993; Ratner 1993). This plurality of terms suggests, that prior to conducting surveys and interpreting data, it is important to understand the language, including local terminology, associated with drug use (Fullilove and Fullilove 1993). Failure to consider drug nomenclature can result in underestimates of use. For instance, terminology may be very specific to a location or ethnic group, and one may, therefore, see great variability in rural areas where there are both diversity between communities and isolation from other communities.

For example, the drug history section of the RBA elicits information about past and current (in the past 30 days) drug use. The RBA asks (a) "Have you ever used crack (smokable cocaine)?" and (b) "Have you ever used cocaine by itself (other than crack) that you injected or snorted?" When asked the first question, respondents usually commented that crack is a synthetic drug unlike the cocaine they were smoking and that there was no crack in Alaska because it was all in New York or California. In a number of cases, respondents said "no" to crack use and "yes" to injecting or snorting, but when asked, "How many days in the last 30 days have you used [snorted and/or injected] cocaine by itself?" they indicated zero. At this point, knowing that the respondents had tested positive for cocaine metabolites, interviewers probed respondents by reminding them that they had tested positive to cocaine and asking "How did you use the cocaine?" Usually the response was that they had smoked it; consequently, interviewers now ask "Have you ever used smokable cocaine?" This generic term seems to be better understood and more acceptable to the respondent.

Self-Report

Self-report is a convenient method of collecting data when resources are limited, as they are in rural areas. However, the extent to which self-report provides a valid measure when sampling from a drug-using population is regularly challenged. Many studies have focused on truthfulness and have demonstrated a rather high degree among addicts (Ball 1967; Bonito et al. 1976; Stephens 1972). However, threats to respondent validity, when subjects are unable to remember or never knew answers to administered questions, have been largely ignored. (Harrell 1985). This may result in fallacious inferences made by researchers and health care practitioners, as in the case of health histories of asymptomatic disease. The accuracy of self-reported health history in high-risk populations may not be sufficient to use as measures of infection prevalence. For example, several studies of high-risk populations have suggested large discrepancies between HBV infection based upon self-report and serological evidence of HBV infection (Comfort and Wu 1989; Hart et al. 1993; Kleyn et al. 1993). Such discrepancies may underestimate HBV prevalence and relative risk (Joe et al. 1990; Kuhrt-Hunstiger and Fisher 1994; NIDA 1989*a*, 1989*b*; Simpson et al. 1993) and have important implications for investigations of HIV.

To ascertain the validity of the Anchorage data, agreement between self-reported and serological-based HBV infection rates among drug users were compared. Data were collected between February and August, 1993. Of the 124 men and 68 women in this sample, ethnic distribution was as follows: black, 46 percent; white, 32 percent; Alaska Native/American Indian, 16 percent; Hispanic, 3 percent; and Asian/Pacific, 1 percent. Current needle users comprised 27 percent of subjects.

All participants were tested for HBV seromarkers by enzyme immunoassay for HBV surface antigen (HBsAg), core antibody (anti-HBc), and surface antibody (anti-HBs). A subgroup (N = 100) of this sample was also serotested for alanine aminotransferase (ALT) and hepatitis C infection (anti-HCV). Additionally, all subjects were asked the RBA question, "How many times have you been told by a doctor or a nurse that you had hepatitis B?"

Presence of anti-HBc or HBsAg was used as the standard for a history of HBV infection. Self-reported prevalence of HBV was 15 percent, whereas the serological testing prevalence was 36 percent. Of the 123 subjects testing negative for HBV (64 percent), 119 responded that they have never been told they were infected with HBV (specificity = 96.75 percent). Moreover, the majority of subjects testing positive for HBV responded that they had never been told they were infected with HBV (65.22 percent), yielding a low sensitivity of 34.78 percent. When anti-HBs was compared to self-report, specificity was 92.42 percent and sensitivity was 31.58 percent. Non-HBV seromarkers also provided relatively low sensitivity for HBV self-report. ALT levels above 48 international units per liter (IU/L) were considered elevated. Sensitivity and specificity of HBV self-report compared to elevated ALT were 31.58 percent and 87.67 percent, respectively. HBV self-report sensitivity and specificity associated with anti-HCV were 26.92 percent and 95.83 percent.

Among those testing positive for HBV, ethnic minority (black and American Indian/Alaska Native) groups were least likely to self-report infection. Of the 32 white subjects who were HBV positive, 22 (62.5 percent) self-reported HBV infection, whereas only 5 of 29 positive blacks (17.2 percent), 4 of 10 (40 percent) positive Alaska Native/American Indian, and 1 of 7 (14.3 percent) other ethnicity self-reported HBV. The ethnic distribution of individuals self-reporting HBV infection differs considerably from the ethnic distribution of those sero-testing positive, as is demonstrated in figure 3.

Self-report of hepatitis B infection prevalence in the current sample provided a biased estimate when compared to sero-confirmed tests. When drug users reported that they had been told they were infected with HBV, they did so very accurately. This supports other findings that suggest accuracy and truthfulness in self-report among drug users. However, an alarming number of subjects had never been or did not remember being told of their HBV infection history.

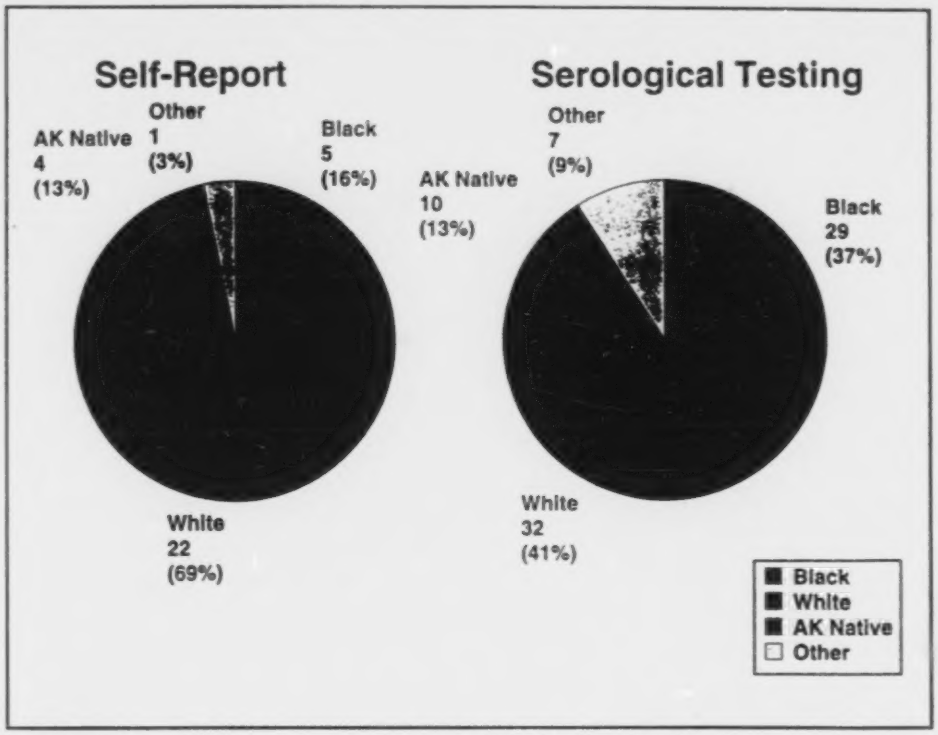

FIGURE 3. *HBV-positive subjects: Ethnic distribution by prevalence measure.*

Further investigation is needed to explain factors contributing to low HBV treatment and self-report. However, there are several possible explanations. First, hepatitis symptoms frequently are either not present or they resemble flu symptoms. Persons with these types of symptoms may not seek health care. Second, HBV infection attributed to illegal drug use may deter drug users from seeking treatment for an infection that is essentially untreatable. Third, the cost of laboratory tests may prevent drug users, especially low-income users, from being tested. This may also explain the ethnic differences in self-report versus serological test results.

Each of these three possible reasons for low self-report and treatment may have particular importance for rural health. First, rural areas typically have fewer health care facilities and providers, and this is particularly true in Alaska. Under such circumstances, individuals who are experiencing symptoms of a minor illness would not be likely to seek out a health care professional.

Second, in rural communities, the possibility of anonymous testing for diseases with a link to substance abuse may be impossible because everyone knows everyone else. Thus, users may be particularly sensitive to scrutiny and detection by health care providers who know them and their family. Clients may, therefore, forego testing and treatment when, in reality, anonymity does not exist.

Finally, those in rural areas often work in seasonal occupations such as seafood, timber, and farming where they have lower access to health insurance. For these individuals, the cost of laboratory tests may be prohibitive, causing them to treat the symptoms and ignore the cause. For these, and possibly other, reasons one would expect that morbidity among rural residents, especially that based on self-report, would be underreported.

Obtaining Sex Partner Information

Earlier work (Fisher et al. 1993*b*) suggested that obtaining information about the sex partners of subjects, especially from Alaska Native female drug users, might help in establishing high-risk routes and networks of disease transmission. A study was initiated in which participants were asked about their (up to five) most recent sex partners, specifically the partner's ethnicity, age, gender, drug use history (if known), condom use at this encounter, whether anything (drugs or money) was traded either way for the sex, and relationship.

Data were analyzed using a multidimensional unfolding analysis (Coombs 1964; SAS Institute 1992). Results displayed in figure 4 are a joint-space representation of the distance between points. The three-letter point labels refer first to gender, second to ethnicity, and third to whether the point refers to the respondent him/herself or to a sex partner of the respondent. Dimensions are arbitrarily located; therefore, it is not as important to interpret the dimensions of the space as it is to interpret the relative locations of the points in the space. Points reflect patterns in the data.

The point at 0.22, 0.91 represents male white respondents (MWR) and female white partners (FWP). The fact that these two are identical in location indicates a strong preference among male white respondents for female white sex partners. (As used here, the term "preference" means self-reported experience and does not imply preference in the more general sense.) Similarly, female white respondents show a preference

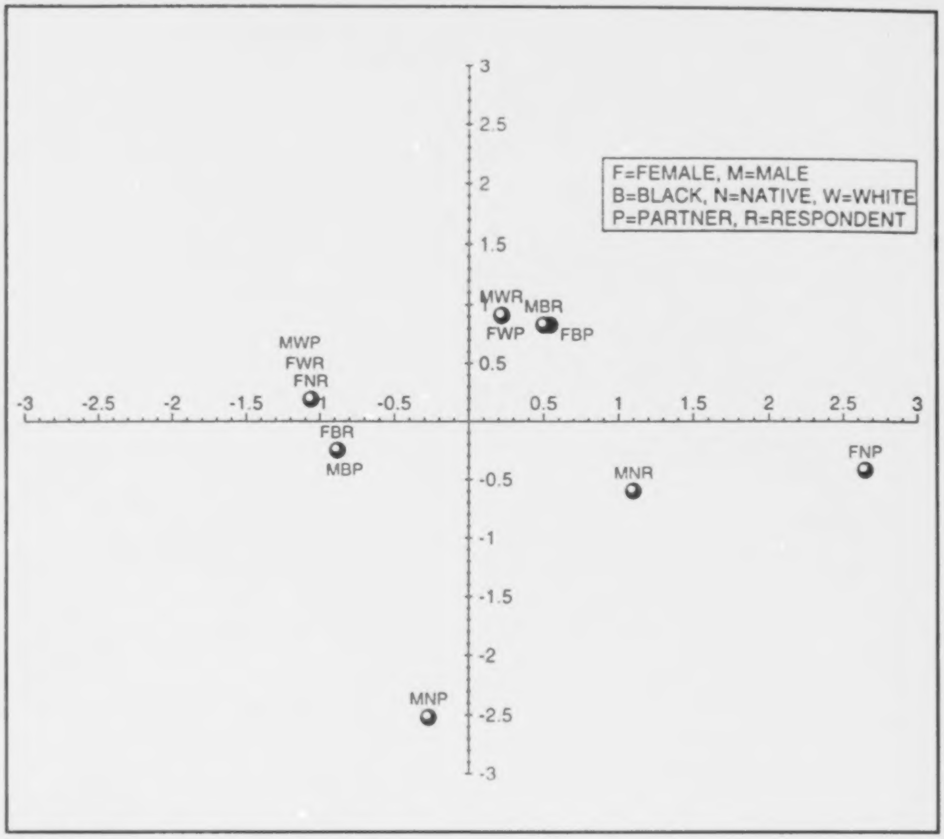

FIGURE 4. *Sex partner preference mapping.*

for white males. The points that represent male black respondents (MBR) show that these respondents had a preference for female black sex partners (FBP), but also a fairly strong preference for female white sex partners (FWP). Similarly, female black respondents (FBR) show a preference for male black partners (MBP). Thus, among blacks and whites there was a tendency toward having sex with racially similar partners.

However, this pattern did not hold for the Alaska Natives. First, male Alaska Native respondents (MNR) (located at 1.1, -0.6) do not show a strong preference for any specific type of sex partner. This is a reflection of their generally low self-report of having any sex partners at all. Second, female Alaska Native respondents (FNR) show a strong preference for male white partners (MWP). Thus, they are unique in showing a preference across ethnic groups. This point suggests a potential disease vector, the only one that crosses ethnicities, between

Alaska Native female drug users and white men. In addition, these men are also likely to be injection drug users. The authors' earlier research demonstrated that the Alaska Native female subjects have a much higher proportion of sex partners who are needle users than any other sex/race combination (Fisher et al. 1993*a*). Moreover, white men and women and Alaska Native women are the sex/race groups that are most likely to be needle users.

Hamilton and Seyfrit (1994) have demonstrated a higher rate of female outmigration from the rural areas of Alaska to the urban area of Anchorage. In fact, "Bush villages tend to have more young Native men than women, whereas larger cities have more young Native women than men" (p. 1). The relationship between this circumstance and the preference for white sex partners is unclear.

RECOMMENDATIONS FOR FURTHER RESEARCH

There are several major problems with doing research in rural areas. One is that confidentiality can be difficult to maintain in a setting where everyone knows everyone else. Another is that, traditionally, national studies have overlooked rural areas. A third is the lack of an infrastructure for conducting complex studies in rural areas, which is enmeshed in a cycle that includes a lack of literature to cite in writing grant proposals to establish the infrastructure, to do the research, and to create the literature.

Larger urban areas are part of Federal efforts such as the Drug Use Forecasting (DUF) and the Drug Abuse Warning Network (DAWN) systems that provide data at the national level and to local and State entities. A similar system of data collection and screening is needed for rural areas. The creation of local infrastructures should be systematically supported so that local researchers can collect community-level data. Historically, researchers from major universities have obtained Federal grant money to conduct rural area studies with little or no input from local populations. This pattern has generated opposition on the part of local populations to all research, even that proposed by local researchers attempting to do local studies. Funding organizations should recognize that local researchers have a stake in their community as well as respect for local values and norms. These aspects of the social milieu are often missed by nonlocal researchers.

Steel and colleagues (1993, p. 287) have stated that "a clear need exists for research attention to injection drug use as a risk factor for HIV disease in small cities and nonmetropolitan areas. To formulate effective HIV prevention strategies in these areas, systematic studies about the nature and extent of risk behaviors of injection drug users in less-populated areas are called for." One would only need to generalize their statements for needed studies to include all drug use as risk factors for disease in general.

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Social and Economic Consequences of Rural Alcohol Use

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One-quarter of the population of the United States lives in nonmetropolitan or rural areas (U.S. Congress 1990). These areas are notable for their rich diversity and varied lifestyles. From farming communities in the Midwest, to agricultural areas of the Mississippi Delta, Native American reservations, Appalachian and Ozark Highlands, and western oil-based boom towns, rural communities vary greatly in socioeconomic characteristics, ethnic and minority mix, and availability of health and social services. At the same time, rural communities share a number of characteristics: they are defined by the low population density; most are severely limited in access to professional health, mental health, and substance abuse resources; and rural economies are often volatile in nature with increased dependence on agricultural, extractive, and service industries (Gesler et al. 1992). Higher rates of poverty and substandard housing in rural areas in general and lower educational attainment of rural residents increase the chances that families from these regions will suffer the negative consequences of such health risk behaviors as problem drinking (Meade 1992).

Alcohol is the primary drug of abuse in rural areas (Kelleher and Rickert 1991). A growing body of evidence suggests that the consumption of alcohol and the prevalence of alcohol use disorders is as high or higher in some rural populations as in metropolitan samples (Helzer et al. 1991). This may be especially true for rural areas experiencing economic downturns or uncertainties and for those groups within rural communities at highest risk (i.e., the disenfranchised, minority, or poor). Moreover, indications are that consumption may be increasing for some rural populations, although further documentation is needed to identify communities that are most vulnerable.

While studies examining consumption and patterns of drinking for rural populations are providing new evidence about the causes of alcohol use in rural areas, there has been almost no discussion of the social and economic consequences or how these may differ in rural communities and metropolitan areas.

Correlational evidence can be presented to support the view that marital, family, and workplace conflicts predispose one to drink, and to support the view that these problems are outcomes of abusive drinking. The bulk of the literature considers these conflicts to be risk factors for problem drinking. Conceptualizing them as consequences of alcohol use, however, may be important for the design of interventions and policies that lessen the negative effects of alcohol use on rural communities and underscore the public health importance of excessive or problematic alcohol use. The purpose of this chapter is to review a broad framework for examining the social and economic consequences of alcohol use, explore how those consequences might vary for rural populations, and suggest potentially fertile areas for continued work.

SOCIAL CONSEQUENCES

Social consequences of alcohol use can be grouped into those resulting in changes in social interactions with others (direct social consequences) and those resulting in changes in one's social position or life chances (indirect social consequences). These effects and factors that modify them are depicted in figure 1, modified from Kreitman (1992).

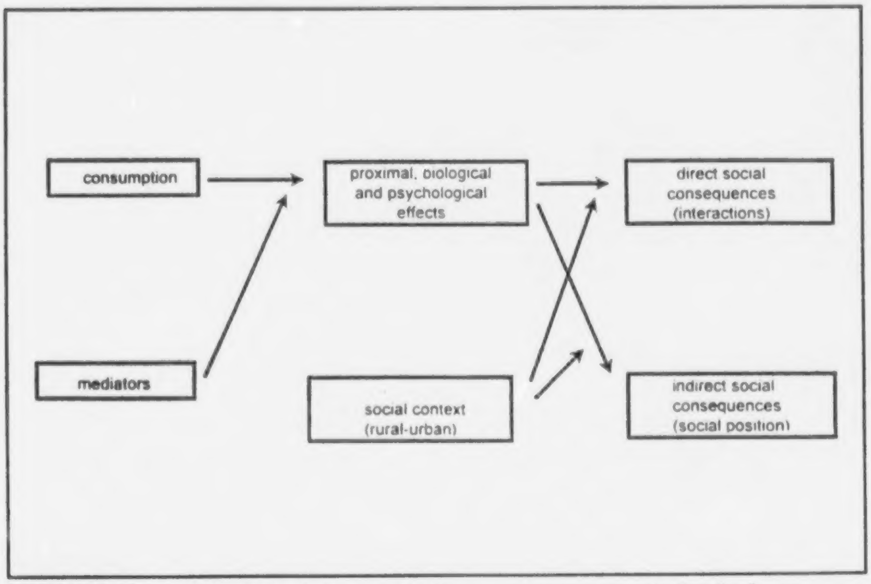
consumption
mediators
proximal, biological and psychological effects
social context (rural-urban)
direct social consequences (interactions)
indirect social consequences (social position)

FIGURE 1. *Model of the social consequences of alcohol consumption.*

SOURCE: Modified from Kreitman 1992.

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Consumption in this model refers to the intake of alcoholic beverages and is usually measured in terms of absolute ounces of ethanol. Of course, patterns of consumption in addition to quantity of intake may be critical factors in affecting consequences. The direct health effects of alcohol are most often associated with total ethanol intake, whereas many psychosocial consequences may be related to episodes of acute intoxication or to prolonged dependency symptoms accompanying alcoholism (Hauge and Ingens-Jensen 1986). For example, hepatic (or liver) toxicity is highly correlated with total consumption, whereas family violence is often centered around episodes of intoxication.

Proximal biological and psychological effects of alcohol consumption relevant to a discussion of social consequences are the acute and chronic effects of alcohol on the physiological processes of the body and the effects of alcohol on mood, cognition, and memory. Dependence symptoms and acute alterations in mood and thinking processes may seriously impair individuals' ability to interact with others and their performance in social roles. Alcohol also may be a factor in aggressive behavior, leading directly to social conflicts (Collins and Schlenger 1988).

A variety of mediators affect the extent to which consumption results in specific biological and psychological consequences. These include expectations about alcohol effects, gender, metabolism of alcohol, and other biologic vulnerabilities or resilience (Kreitman 1992). Most of these factors affecting metabolism are not mutable. However, alcohol expectancies or the belief system about the likely effects of alcohol consumption appear to play an important role in level or patterns of consumption and may be amenable to educational interventions (Brown et al. 1985; George and Marlatt 1986).

Specifically excluded from this discussion are effects of alcohol on behavior and safety as they produce mortality and morbidity, except to the extent that these effects alter social interactions and social role performance. Falls, fire, motor vehicle injuries, hunting injuries, drowning, and high-risk sexual behavior are well-known behavioral consequences of alcohol consumption (Department of Health and Human Services (DHHS) 1994*b*). Because these events are largely expressed as health consequences, they will not be addressed in this chapter. Rather, the focus will be on consequences of alcohol consumption that occur within the context of the marriage, family, community, and workplace of the drinker.

The social context in which drinking occurs will influence the consequences of consumption. Social context includes ethnic or social group norms that define appropriate and inappropriate occasions for, and amounts of, drinking (Herd 1984). For example, use of any alcohol in communities where abstention is the norm can have immediate negative consequences for social interactions and threaten one's social position in the community. By contrast, regular heavy drinking may have ironic social advantages in some ethnic communities and social groups in which consumption is expected and valued (Linsky et al. 1986). Similarly, consequences of use in certain social contexts, such as the home, may depend on negative consequences of use in unrelated contexts such as work. Alcohol intoxication may or may not be viewed as problematic by spouses of heavy drinkers depending upon whether it interferes with job performance or maintenance of household function (Wiseman 1991).

The biological and psychological effects of alcohol consumption have direct consequences for individual drinkers by altering their interactions with primary and secondary social relations. The psychopharmacologic effects of excessive consumption, including disinhibition, cognitive-perceptual distortion, attention deficit, and bad judgments, may directly impact the quality of interactions with others.

Proximal effects of consumption also have indirect consequences for drinkers by altering their performance of social roles—the central duties individuals perform to maintain the functioning of society. Each societal member occupies a set of social roles. Roles are associated with commonly held assumptions about how a person should behave, and shared expectations concerning the ways others in society should behave toward the person performing the role. Four primary social roles are relevant for this discussion: spouse, parent, community member, and worker (or student). Over time, performance in each of these roles is influenced by immediate interactions with other society members who judge role-related behavior against norms for that behavior. Expectations of role-appropriate behavior likely vary by age, gender, social or ethnic group, and rural or urban residence.

The concept of social role is central to definitions of problem drinking and alcohol abuse. According to a widely held paradigm in alcohol studies, the cardinal indications of problem drinking are the negative direct consequences of excessive consumption on social interactions and, indirectly, on the performance of social roles (American Psychiatric

Association 1987; Donovan and Jessor 1985). Alcohol abuse and dependence are partly defined by the conflicts with others caused by alcohol use and disruptions in role performance due to drinking (American Psychiatric Association 1987).

In the home, adults may fill two primary social roles—spouse and parent. Alcohol clearly has direct consequences on the performance of these roles. More than 60 percent of individuals with a diagnosis of alcohol abuse or dependence and 30 percent of weekly heavy drinkers report family conflicts due to drinking (Helzer et al. 1991). Conflict can manifest as spousal abuse or as other relational problems. Alcohol is commonly involved in episodes of spousal abuse (Kantor and Straus 1989). Although information is limited, one-third to more than one-half of episodes of spouse abuse involving police are associated with alcohol abuse (Morgan 1982).

Unfortunately, the mechanism by which alcohol might contribute to domestic violence is not fully understood (McCrady 1987). A variety of authors suggest that alcohol acts directly to increase aggression (Morgan 1982); other studies suggest that alcohol inhibits empathy and increases acceptance of violence (Gustafson 1987). Alcohol probably also contributes to stress and depression in the household, thereby increasing the opportunities for conflict (Turnbull and Gomberg 1988). Interestingly, victims of domestic violence are also more likely to have alcohol problems than are controls, and the violence perpetrated upon them is more likely to be severe (Miller et al. 1989).

Among rural families, the increased level of tension brought about by volatile economic conditions, higher rates of under- and unemployment, and substandard housing may increase the risk of spouse maltreatment by drinkers and maltreatment of drinking spouses. Alternatively, the lack of anonymity felt by residents of small communities may inhibit spouse maltreatment by drinkers. Heavy drinkers may be less likely to be assaultive if they anticipate that the visible marks of spouse abuse will be noticed by friends and acquaintances in the community.

Indirect social consequences of drinking on the family likely begin before the formation of the family as a social group. Although the literature is sparse, alcohol consumption and alcohol use problems probably influence mate selection indirectly by increasing or decreasing one's chances in the marriage market. Men and women with alcohol problems are less likely to ever marry than are nondrinkers (Clark and

Midanik 1979). Moderate drinking, however, may increase the likelihood of marriage. Alcohol consumption in adolescence is associated with better romantic relationships in young adulthood. In a longitudinal study of more than 600 teenagers, Newcomb and Bentler (1988) found that drinking frequency, but not quantity, during adolescence was associated with decreased self-derogation and fewer feelings of loneliness in romantic relationships 8 years later. The researchers reason that alcohol consumption at this age reduces social inhibitions and allows awkward adolescents more opportunity to develop adequate social skills. No assessment of social networks was reported.

Heavy drinking is clearly associated with relational problems during marriage and stability of the marriage. Heavy drinkers experience more marital conflict and increased tension in their spousal relationships (Helzer et al. 1991). It appears that increased tension and conflict are related less to the amount of drinking per se and more to decreased household functioning or productivity, at least for men (Zweben 1986). Nonetheless, marital satisfaction is lower among heavier drinkers than nondrinkers (McCrady 1987), and more marriages end in divorce when one partner drinks heavily (Schoenborn 1991). Alcoholism is particularly high among those with repeated failed marriages. A quarter of individuals who have been divorced or separated more than once compared to only 9 percent of those with stable marriages meet criteria for a diagnosis of alcohol abuse or dependence (Helzer et al. 1991). While serious alcohol use problems appear to increase the chances of marital disruption, frequency of use may not be associated with divorce. In a well-designed longitudinal study of adolescent drug use, frequency of alcohol use from age 15 through 25 was not significantly associated with the likelihood of divorce or separation during that time (Kandel et al. 1986).

The impact of drinking on the marriage may vary according to residence. In close-knit rural families, where alternative sources of kin and friend support are available, heavy drinking may be less disruptive of marriages. Similarly, negative attitudes toward divorce in conservative rural communities may keep some spouses in marriages damaged by alcohol. Conversely, in rural farming communities where husband and wife work as partners in the performance of an integrated series of tasks, abusive drinking may threaten both the marital relationship and the family's livelihood (Rosenfield 1985).

The direct consequences of alcohol abuse on the parenting role are first expressed before childbirth with the well-known effects of consumption on the risk of pregnancy complications, low birthweight, fetal alcohol syndrome and fetal alcohol effect (Coles et al. 1992; DHHS 1994*a*). Following birth, alcohol problems continue to affect the performance of the parental role. Parents with alcohol abuse or dependence diagnoses are more likely to physically abuse their children, and this trend remains when such confounding variables as gender, age, socioeconomic status, and other parental psychopathology are factored into the equation (Chilman et al. 1966; Morgan 1982). Child neglect is even more common among those with alcohol dependence; it has been found to be four times more likely among parents with alcohol dependence than among control parents without alcohol disorders (Fillmore 1984; Kelleher et al. 1994).

Indirectly, alcohol abuse first affects the parental role by influencing the number of children ever born to a family, and the number of children born out of wedlock. Families of heavy drinkers are larger and include more children born to single parents (Frances et al. 1980). Excessive consumption also brings changes to the home environment with unpredictable and inconsistent parenting styles and lower income (Latham and Napier 1992). Mothers who drink heavily have been found to be less active and stimulating in their interactions with infants and less securely attached to them (O'Connor et al. 1987). For parents with alcohol dependence, the focus on obtaining alcohol to the exclusion of other responsibilities is likely to lead to inadequate parenting and escalation of behavioral problems of children. Parental alcoholism can also have indirect social consequences for children, including poor school performance, delinquency, and early abusive use of alcohol (Sher 1991; Wolin et al. 1980).

Among rural families, economic hardship may be associated with a pattern of harsh parenting that is transmitted across generations (Conger et al. 1992; Simons et al. 1991). While physical discipline sometimes results in obedient, prosocial behaviors in children, the addition of parental alcohol abuse may lead to problematic adjustment of children. More research is needed on how alcohol may influence parenting in rural families, and how the interplay between rural childrearing practices and alcohol consumption may have unintended negative consequences on child development.

The direct consequences of heavy or problem drinking on the social role of community members are most often thought of in terms of criminal behavior and victimization. Individuals involved in property crime and violent offenses against others are much more likely to have alcohol problems with or without drug problems than comparison groups in the community. Almost half of those with an alcohol use disorder report having had fights due to drinking and a third have been arrested because of drinking (Helzer et al. 1991). Upwards of 50 percent of all homicides involve drinking by the perpetrator, and incarcerated criminals report that drinking quantity and frequency increased immediately preceding criminal activity (Roizen 1982; Wieczorek et al. 1990; Robert Wood Johnson Foundation 1994). Nevertheless, most people consuming alcohol and even heavy drinkers do not commit violent crimes. Although alcohol is not the sole cause of violent behavior, it must be seen as an important predisposing factor for some people.

Many studies have also shown higher rates of alcohol consumption among victims of violence (Fagan 1990). Alcohol has been found in the blood of high proportions of homicide victims. In an analysis of medical examiner records, Welte and Abel (1989) found detectable blood alcohol levels (BAL) in 42 percent of 792 homicide victims in Erie County, New York. Of those, over 70 percent had a BAL greater than 0.10 milligrams per dekaliter (mg/dL). Victims of spousal violence are also thought to have higher rates of abusive drinking. In a random sample of U.S. families, Kantor and Straus (1989) found that 46 percent of severely assaulted women reported being drunk one or more times in the past year compared to 16 percent of nonvictimized women. Victimization may be associated with alcohol abuse because drinkers are more vulnerable to violence, because direct acts of alcohol-induced aggression provoke violence, or because drinking victims more often find themselves in social contexts where violence is common.

The popular notion that criminal behavior is an urban problem does not apply to alcohol-related offenses. Rural states and counties have arrest rates for substance abuse violations (e.g., driving under the influence, liquor law violations, drunkenness, and possession of illegal substances) equal to those of nonrurai states and counties (General Accounting Office (GAO) 1990). Rural states, counties, and towns have higher arrest rates involving illegal use of alcohol than nonrural states, suburban counties, and larger cities. Most prison inmates in rural states have abused alcohol, other drugs, or both (GAO 1990). No comparative data are available on rural and urban rates of violent or property crimes associated with alcohol abuse.

In addition to criminal behavior and victimization, alcohol may also have indirect consequences on community participation. Although this area has not been explored empirically, the impact of alcohol-use disorders on community leadership and volunteerism is likely a negative one. Abusive drinkers often withdraw from social contact and social commitments and the aggressive behavior of heavy drinkers often results in social ostracism (Colsher and Wallace 1990; Cummingham et al. 1993). Rural communities may be particularly affected by the absence of effective leadership because they are less likely to have formal social service agencies for many needs and are more dependent on benevolent and church groups (Bachrach 1981).

Heavy drinking has direct effects on workplace performance. Studies of work-related problems due to alcohol use have not focused on rural issues to any discernible extent. Nevertheless, almost every industry is adversely affected by alcohol problems in the workplace. The assumed relationship of alcohol consumption to substandard job performance has formed the foundation for interventions geared toward the identification and rehabilitation of the problem drinker (Roman 1990). The Institute of Medicine reviewed studies in the area of employee substance abuse and concluded that approximately 10 percent of all workers had drinking problems that adversely affected their job performance (Institute of Medicine 1994). These problems manifested themselves in a variety of ways, including increased absenteeism, decreased productivity, excessive use of health care, more frequent turnover, and greater requirements for retraining (Robert Wood Johnson Foundation 1994). This report also noted that the prevalence of alcohol-related job problems was likely to be affected by both the industry type and job characteristics. For example, construction, transportation, and manufacturing had a much higher prevalence of alcohol problems on the job than other service, trade, or professional industries. These industries are overrepresented as a proportion of all jobs in rural regions compared to urban areas (Anonymous 1992).

While evidence has accumulated that job performance may be affected by alcohol consumption patterns, nearly all of this research is based on samples of workers identified as problem drinkers. The alleged negative relationship between worker productivity and alcohol abuse may therefore be questioned. Cook (1991) and Heien and Pittman (1989, 1993) conclude that, once adjustments are made for differences in education and demographic characteristics, little credible evidence exists to support the belief that heavy drinkers in general are less productive members of the labor force than others (Cook 1991; Heien and Pittman 1989, 1993).

Less directly, alcohol abuse may lead to job loss due to nonperformance, lost earning potential due to denied promotions, and lower job satisfaction. Heavy-drinking workers have been judged to be less self-directed and cooperative than other workers (Blum et al. 1993). The 1-year prevalence rate of alcohol abuse or dependence among those who meet criteria for underemployment (6 months or more out of work in the past 5 years) is more than twice that of those who do not meet criteria (12 and 5 percent, respectively) (Helzer et al. 1991). Frequency of alcohol use in adolescence is positively associated with number of different employers by age 25 for both men and women (Kandel 1980).

Heavy drinking may also limit optimal worker role performance indirectly by limiting educational attainment and aspirations necessary to complete the training required for a higher level position. The lifetime prevalence of alcohol use disorders is higher among those who drop out of educational programs at any level, including junior high, high school and college, than those who finish the program (Helzer et al. 1991).

To the extent that economic structures of rural areas are more tentative and fragile, rural workers are likely more vulnerable to layoffs and to dismissals with cause. Rural areas are characterized by less diversified economies with higher rates of unemployment and lower educational attainment among workers (Anonymous 1992; Goetz 1993). All deviant behavior, including problem drinking, is therefore likely to have stronger negative consequences for rural individuals in the workplace. Moreover, rural industries disproportionately include jobs at high risk for unintentional injuries such as construction, mining, and manufacturing (U.S. Congress 1990). The risk for such injuries may increase with the motor impairment associated with alcohol consumption.

Although alcohol frequently has a number of negative social consequences, at least when consumed heavily, the research conducted to date has not examined whether or how these consequences are manifest in rural populations. Discussion of these effects must therefore be speculative, though one could suggest that rural populations would likely experience different social consequences based on the various components in the model outlined in figure 1. Thus, rural populations may differ in patterns of consumption, expectancies about the effects of alcohol, or social context.

Consumption patterns probably differ in rural areas. For years, parts of the South and West have been noted to have lower per capita consumption rates. These rural areas have a much greater proportion of abstainers who are included in the denominator (Williams et al. 1991). When average consumption of alcohol is computed only among drinkers, however, many of the rural States have very high levels of consumption. Work from the National Institute of Mental Health Epidemiological Catchment Area study suggests similar findings. Rural study sites have both more abstainers and a greater number of persons with alcohol abuse or dependence (Blazer et al. 1985). Adolescents in some rural areas are also more likely to be abstainers, but rural areas may have more daily adolescent drinkers as well (Johnston et al. 1989; Kelleher et al. 1992*a*).

Thus, the prevalence data suggest that rural populations include a greater proportion of abstainers than do metropolitan areas. The literature on rural-urban differences examining rates of heavy drinking is equivocal. This may be a result of methodologic differences in earlier work, cohort effects, or variations across rural areas. For example, even in an area as homogeneous as the rural South, the tradition of alcohol consumption differs drastically among regions and cultural groups. Abstinence, connected historically to the temperance movement, Protestant religion, and African-American struggle for emancipation, is very common among young African-American girls of the rural South (Kelleher et al. 1992*a*). In contrast, the tradition of self-reliance and alcohol production for private use and profit among residents of Appalachia and the Ozark Highlands may translate into higher rates of consumption among both males and females. Further analyses are needed of unique qualities of rural areas and the meaning of alcohol to rural populations.

The mediators that influence proximal consequences may also be different for rural populations. Although there is no reason to suspect that the metabolic or genetic makeup of rural and metropolitan groups is notably different, alcohol expectancies may markedly alter behavioral and psychological effects following alcohol consumption and could vary by region. Rural adolescents may initiate drinking earlier than all but inner-city youth and do so more often with their families (Kelleher et al. 1992*b*). In fact, Chambers suggested that rural families were more likely to model heavy drinking in front of their children (Chambers et al. 1982). If personal beliefs about alcohol are more closely associated with normative, family-based rituals among rural residents, drinking and occasional heavy drinking may have less damaging consequences for personal relationships and role performance. In contrast, if alcohol use is an expression of rebellion against restrictive rural values, the consequences of drinking may be more severe and lasting.

The component of the model most likely to differ between rural and metropolitan areas is social context. Rural communities are by definition smaller and less densely populated than metropolitan communities. Social networks in rural communities generally support fewer relationships, but these relationships tend to be more concentrated, family based, and intense than in metropolitan areas (Fischer 1982; Korte 1982). In comparison to the anonymity of urban living, rural residents spend a greater part of their lives in direct contact with acquaintances who may judge their behavior. These characteristics lead to a set of rural values that include self-reliance, family autonomy, conservatism, religiousness, and intolerance for deviance (Wagenfeld et al. 1994).

Some authors contend that traditional values in rural communities have eroded with in- and out-migration over the past two decades and increasing reliance on telecommunications. To the extent that a set of core values still characterizes rural communities, proximal alcohol consequences will likely be labeled as more problematic for rural than for urban drinkers. Expanded research in the area of how proximal consequences of alcohol consumption are labeled differently among various rural regions and metropolitan comparison groups should be fruitful.

Drinking in rural communities with a large population of abstainers, more conservative social values, less tolerance for deviation, and relative absence of anonymity may be subject to greater social and legal sanctions than drinking in more permissive urban communities. Some evidence does suggest that heavy drinkers in rural areas are more likely to experience negative social consequences. In a national survey, Callahan and colleagues (1969) noted that similar portions of rural and metropolitan individuals described negative social consequences associated with alcohol consumption. These consequences included trouble with friends, family, employers, or legal authorities over drinking. Among heavy drinkers only, however, 65 percent of the rural respondents described negative social consequences, while only 40 percent of metropolitan subjects experienced negative consequences.

In the preceeding discussion, areas in which rural residents may experience social consequences of heavy drinking that are different in quality and magnitude from those experienced by urban residents have been proposed. Alcohol may have differential effects on family conflict and disruption, parenting skills and outcomes, criminal behavior and victimization, and work stability and performance in rural areas. The unique expectancies associated with alcohol use, the traditional meaning of alcohol to rural areas, and the context of economic insecurity and social values associated with rural life are held to influence social consequences of rural drinking.

In an effort to address these rarely studied consequences of alcohol use, the obvious question of reverse causality has not been considered. It is certainly true that many conflicts in personal relationships and problems in role performance discussed here can be seen as predisposing one to abusive drinking. These risk factors are important to a full understanding of rural alcohol use. However, study of the consequences of use presented here is also necessary to inform interventions that can lessen the damaging effects of alcohol use problems in rural regions.

Further research on the effects of alcohol use problems on personal relationships, social roles, and life chances should acknowledge the multifactorial nature of social interactions. The range and number of interactions that occur in a single day for most people make it difficult to attribute some specific portion of the good or bad elements of an interaction to alcohol use or abuse. While alcohol abuse may be present, it is inappropriate to conclude that negative social interactions and deficiencies in the performance of social roles can be attributed solely to alcohol abuse. Further research should properly identify the specific role of alcohol within a constellation of factors influencing social behavior, social position, and life chances.

ECONOMIC CONSEQUENCES

Alcohol consumption results in a wide variety of consequences to society. Positive consequences include tax revenues, job production, and marketing promotions that underwrite charitable or entertainment events. Negative economic consequences range from the costs of treatment for alcohol abuse and its medical complications to the loss of potential wages for a person injured in an alcohol-related motor vehicle crash and the increased medical care used by families of persons with alcohol dependence. Estimates of the economic consequences of alcohol consumption are largely dependent on the assumptions made about which costs will be included and which data should be used to estimate such costs.

In addition to the assumptions made about which costs should be included in estimates of economic consequences, the methodology chosen to assign value to various items is a critical factor. At least two approaches have been employed. The human capital approach is the most commonly used method for estimating the economic effects of alcohol (Rice et al. 1985). According to this method, cost estimates are generated by examining direct costs (costs for which payments are made) and indirect costs (costs for which resources or opportunities are lost). To calculate the latter, human life is valued at the estimated wage earnings by age and gender, and lost potential becomes the measure of indirect costs. The disadvantages of this method are the failure to include pain and suffering losses in the estimates and the devaluation of the elderly, women, and children who have lower income potential.

The second method of estimating costs of illness is the willingness to pay approach (Rice and Hodgson 1982). In this method, value is placed on human life by how much individuals would pay to avoid some degree of risk for death or disability. As with the human capital approach, willingness to pay may be subject to biases related to socioeconomic status. Moreover, it is difficult to estimate in practice and may be subject to substantial variation across populations and over time. Most authors have relied upon the human capital approach, although integrative approaches employing both willingness to pay and human capital are receiving more attention (Gustafson et al. 1995).

Some investigators have suggested that estimates of the total costs of illness are not appropriate topics for policy studies, or at least policy interventions (Manning et al. 1989). In other words, studies of total costs are less useful than research on societal costs. These studies differentiate internal costs (those costs willingly and intentionally incurred by the individual) from external costs (those costs imposed on society by the individual). For example, an individual might choose to purchase alcohol and pay the associated taxes and opportunity costs as internal costs. However, costs related to premature death benefits from a group insurance plan for a drunken driver who dies from a motor vehicle crash are largely born by others and, therefore, would be classified as external. Manning and colleagues (1989) focused on external costs and suggested that heavy drinkers impose considerable external costs on society that are not recouped through taxes or other means. This stands in contrast to the costs imposed by smokers. In the Manning analyses, smokers pay taxes that approximate the external costs they impose on society.

In the estimation of economic consequences, economists have generally discussed core costs (e.g., items dealing with the care and support of the drinker) and other related costs (e.g., costs to society for welfare and criminal justice systems that are required to deal with the negative social consequences of alcohol-related problems). Among the core costs are direct costs for which reimbursements or payments are made and indirect costs that represent the value of productivity lost to alcohol-related morbidity and mortality. Some economists have included the costs of fetal alcohol syndrome in calculating total costs.

Landis published one of the first comprehensive estimates of the economic consequences of alcohol abuse (Landis 1945). In "The Economic Aspects of Inebriety," Landis suggested that alcohol production, distribution, marketing, and consumption created many jobs and tax revenues for Federal, State, and local agencies. Landis also estimated that the costs of psychiatric, medical, criminal justice, and injury-related expenses would total almost $350 million per year, while wage losses would increase these total annual economic costs of alcohol in the United States to $780 million.

Although Landis' estimate of economic consequences of alcohol abuse was substantial at the time, the refined methodology and improved data available have resulted in substantially greater cost estimates today. The most comprehensive study to date employed a cost-of-illness approach to conclude that alcohol abuse in the United States cost $70 billion a year in 1985, $85 billion in 1988 (Rice et al. 1990), and $98.6 billion in 1990 (Rice 1993). The breakdown of the various categories of costs is illustrated in table 1. As is the case with other estimates, the largest component of alcohol costs is related to the premature death and impairment of individuals and the loss to society of their productive capacity. However, some authors have challenged these estimates as excessive primarily because of the assumptions about the causal role of alcohol in these losses.

Conceptually, the economic consequences of alcohol use for rural areas might differ from estimates for metropolitan areas if either the amount of alcohol consumed or the costs associated with a specific amount of alcohol consumption are different in rural areas.

A limited amount of evidence suggests that rural consumption may be greater in certain areas. Blazer and colleagues (1985) report higher rates of alcohol abuse and dependence in rural areas compared to metropolitan samples. Johnston and associates (1989) note that high school seniors

TABLE 1. *Categories for external costs of alcohol abuse (excludes internal costs or those assumed by drinker).*

- Core costs
  - Direct treatment of alcohol problems
  - Indirect costs from injuries (lost productivity)
- Other related costs
  - Direct
    - Crime
    - Motor vehicle crashes (property loss)
    - Fire
    - Social or welfare aid
  - Indirect
    - Incarceration for DUI (lost productivity)

from rural areas are slightly more likely to drink daily than are their urban counterparts. In contrast, Kelleher and colleagues (1992*a*) note that rural residence is associated with lower consumption for some females. Rural States do have higher rates of alcohol-related arrests and alcohol-related treatment admissions than do more urban States, although it is unclear whether this reflects greater numbers of problems or less tolerance for deviance (GAO 1990). Similarly, the increased frequency of motor vehicle-related fatalities and injuries associated with alcohol in rural areas may be linked more closely to the quality of roads and greater distances traveled in rural regions than to alcohol.

Estimating the likely costs for a given amount of alcohol consumption in rural areas requires some background on rural economies. The most striking finding is the marked heterogeneity among rural communities (U.S. Congress 1990). This is consistent with the sociological literature that documents greater variation among rural communities than between rural and adjacent metropolitan communities (Wagenfeld et al. 1994). Nevertheless, some findings are consistent across rural areas. First, the mechanization of agriculture and changing land values have dramatically reduced the proportion of the population living in rural areas and the number working in agriculture. The population share for rural areas has roughly halved in the past 50 years; less than one-quarter of the population is rural (Goetz 1993). Even more striking, the employment share of farmers during the same period fell from approximately 20 percent to

3 percent. To compensate for declining income, 92 percent of farm families earn off-farm income with more than half of that coming from off-farm salaries.

Rural areas are characterized by greater levels of poverty, substandard housing, and school dropout than metropolitan areas (U.S. Congress 1990; Anonymous 1992). Moreover, the elderly and very young constitute a larger proportion of the rural population, leading to a greater dependency ratio (Bachrach 1981) and higher spending on social and human services to support these groups. Rural females are also more likely to spend significant time in caring for impaired or disabled family members, limiting their out-of-house income (Horwitz and Rosenthal 1994). Rural families are also less likely to be insured than are metropolitan families and to have higher out-of-pocket expenditures for health care.

Goetz (1993) suggests that the lower educational attainment of rural populations contributes to the inadequate economic development characterizing many rural communities. Moreover, Goetz postulates that factors that discourage educational investment (such as school funding disparities) or individual behaviors (such as alcohol abuse) affect rural areas disproportionally because of the greater inefficiencies in translating educational investment in rural areas into economic opportunity. However, the lower wages and earnings opportunities in rural areas suggest that the predicted human capital costs of alcohol consumption would be lower for rural as compared to urban areas.

Because no work has been conducted on estimating the economic consequences of alcohol consumption among rural versus metropolitan populations, it seems useful to provide preliminary analyses of alcohol-related work problems among rural and metropolitan patients presenting for treatment of alcohol dependence. Gustafson and associates (1995) have noted that work-related problems and absentee days are the best predictors of total costs for chronic conditions among adults. The largest components of total costs for health conditions are for nonmedical payouts and lost-opportunity costs related to the workplace.

Study of the social and economic consequences of rural alcohol use is new. Therefore, it is appropriate before embarking on major research efforts to define the goals of such study. Conceptualizing social consequences in terms of altered social interactions and impairments in role functioning may underscore the unique social context of rural communities. Rural family structure, friendship patterns, community obligations, workplace requirements, and drinking norms are not simply less sophisticated versions of those in the metropolis, nor are they consistent across rural areas. By analyzing each of these dimensions of the rural social context, informed study of rural alcohol use can incorporate the rural ethic without treating it as monolithic. Careful study of the special social consequences of rural alcohol abuse may lead to novel opportunities for preventive interventions.

In addition, the examination of the total costs of alcohol consumption can draw attention to the magnitude of rural alcohol abuse. For advocates, the study of how alcohol consumption affects rural economies and industries already in crisis may motivate support for programs to treat and prevent alcohol abuse. Studying external costs of alcohol consumption may suggest to legislatures and planners ways to change rates for alcohol to increase the aggregate level of economic well-being. The potential benefits of such research will not be realized until significant efforts are devoted to examining the unique needs and diversity of rural communities and populations.

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ACKNOWLEDGMENT

This work is supported in part by the Staunton Farm Foundation and National Institute of Alcohol Abuse and Alcoholism (NIAAA) grant no. R29-AA09500. Helpful comments from Dr. Gayle Boyd of NIAAA and data for table 1 from Dr. Thomas McGuire of Brandeis University are gratefully acknowledged. This manuscript was prepared by Ms. Marilyn Ferguson.

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The Economic and Social Costs of Drug Abuse Among the Rural Population

Joseph F. Donnermeyer

INTRODUCTION

There is no doubt that drug abuse among the rural population has increased and that differences in rural/urban prevalence rates have diminished (Ennett et al. 1993; Johnston et al. 1993; Wargo et al. 1990). Some rural/urban differences remain, but many would argue that the problem is as serious—if not more serious—in rural than urban areas (Donnermeyer 1992; Edwards 1992; Kingery et al. 1991; Leukefeld et al. 1992).

Other chapters in this monograph present specific information on the epidemiology and etiology of drug abuse in rural areas, and describe the challenges to implementing prevention and treatment programs in rural contexts. The purpose of this chapter is to present a framework for assessing the economic and social costs of drug abuse. First, the chapter begins by considering definitions of three key sets of concepts: (1) What is rural, and how is it distinguished from urban? (2) How should the terms economic and social be distinguished from each other? (3) What is an economic cost, and what is a social cost? Next, a typology of economic and social costs will be described and applied to the rural context. Finally, this chapter argues that very little is known about the costs of drug abuse to the rural population, and suggests ways in which future research might address these shortcomings.

DEFINING TERMS

What Is Rural?

Rural areas are incredibly diverse. Approximately one-fourth of the U.S. population lives in thousands of small towns and open-country areas that range from locations within eyesight of big city skylines to places that are more than a hundred miles from the nearest hospital. The diversity of rural places is based on characteristics of topography, region, and climate, on the demographic profile of the population, on the type of local economy, and on social and cultural variations of different rural peoples related to race, ethnic origin, and heritage. Official Government definitions of what is rural can never hope to capture this rich diversity. However, they do provide a useful first step toward recognizing that different types of rural places exhibit different prevalence rates for a variety of social problems, including substance abuse.

National epidemiologies, including the Monitoring the Future study and the National Household Survey on Drug Abuse, distinguish between metropolitan and nonmetropolitan areas. A metropolitan statistical area (MSA) includes a core county with a city of 50,000 or more persons and all satellite counties that are economically and socially integrated (i.e., 20 percent or more of the civilian labor force commutes to the core county for employment) with it. Nonmetropolitan is in fact a residual category consisting of all counties that do not qualify as either central city or satellite counties. The nonmetropolitan population is approximately 23 percent of the U.S. population.

Unfortunately, national epidemiologies fail to provide breakdowns of drug use prevalence for different kinds of nonmetropolitan areas. For example, most rural counties in Ohio are within 30 miles of an MSA and have fairly high population densities compared to rural counties of Montana. It is probable that these vastly different rural environments are associated with variations in drug abuse, its prevention and treatment, and its economic and social costs (Edwards 1992).

A second, older Census Bureau definition of rural is incorporated and unincorporated places of less than 2,500 persons that are not small suburbs next to large urban places. According to this definition, the rural population is approximately 25 percent of the U.S. population. Many locality-specific studies of rural substance use employ a population size of place or similar definition. However, as with the metropolitan-nonmetropolitan distinction, this definition is inadequate for examining rural variations in the extent and correlates of drug abuse because it lumps together all rural places and does not distinguish different types of rural places by their population size and their distance from urban places.

On the surface, it would appear that the metropolitan versus nonmetropolitan distinction and the older urban versus rural distinction are similar because there is only a 2 percent difference in their respective population estimates. In fact, they are only partially compatible; that is, they do not necessarily designate the same people. The newer definition categorizes the population on a county basis; however, many of the areas designated as metropolitan include areas that are rural by the older definition. That is, many rural people live in counties that are metropolitan. Conversely, there are many incorporated places larger than 2,500 in nonmetropolitan counties. Thus, many urban people live in nonmetropolitan counties.

Two published analyses of national-level studies indicated the importance of defining what is rural and recognizing diversity within rural contexts. Robertson and Donnermeyer (1995) used the 1991 National Household Survey on Drug Abuse to examine three groups of adults (≥ 21 years of age) living in rural areas of metropolitan counties, in urban places of nonmetropolitan counties, and in nonmetropolitan counties without a town of more than 2,500 persons. They found some differences in current use of drugs, as well as differences in characteristics of drug users based on the three different residential categories. Peters and associates' (1992) analysis of the American Drug and Alcohol Survey found that alcohol and other drug use among rural adolescents varied according to size of the largest town in the county and the proximity of the county to a central city metropolitan county. Prevalence rates among adolescents from the most rural places were the lowest. Similarly, the Monitoring the Future study reports lower prevalence rates among adolescents living in the open country and on farms than among adolescents living in small towns (Johnston et al. 1993).

Understanding the great variety of rural places helps in the estimation and interpretation of economic and social costs, in the development of public policy regarding drug use, and in the design and implementation of prevention and treatment programs. There are four principal and interrelated ways in which rates and patterns of substance use may vary among rural areas: (1) regional differences; (2) distinctions associated with variations in levels of urbanization (e.g., distance from large urban centers, size of nearest town or city that functions as the focal point for community services, and employment among the outlying population); (3) age, ethnic, gender, race, and other dimensions of diversity among rural populations; and (4) variations in economic well-being and occupational structure of rural communities. For example, early work by Harrell and Cisin (1980) from the National Household Survey on Drug Abuse found variations in marijuana use and acquaintanceship with marijuana users among rural respondents based on population density, the area's proximity to military bases, colleges/universities and temporary work sites, and the region. Bell's (1984) analysis of a Statewide study on marijuana use among adults (18 to 59 years old) in Illinois found lower rates among those from farming areas and from rural areas more distant from metropolitan centers, even after controlling for various demographic and social characteristics of respondents.

What Is Economic? What Is Social?

When it comes to assessing the costs of substance use, the distinction between economic and social may appear simple. However, the term "social," like nonmetropolitan and rural, is often defined as a residual characteristic. That is, if a dollar figure cannot be assigned to the phenomenon, then it must be a social cost. It is important to distinguish between economic and social costs using more precise definitions.

Economics is the study of how scarce resources are utilized in a society (i.e., trends and patterns in the production, distribution, and consumption of wealth). Because resources are limited, economic costs of drug abuse may be thought of as "opportunity costs"—the amount of money spent on alcohol, other drugs, and the prevention and treatment of persons who use and abuse these substances represent investments that could be made elsewhere if there were no drug abuse. Some scholars have attempted to estimate the economic costs of drug abuse (Gust and Walsh 1989; Office of National Drug Control Policy 1993; Rice et al. 1990). These estimates are often national in scope and do not attempt rural/urban breakdowns. However, rudimentary extrapolations can be made using the nonmetropolitan and rural proportions of the U.S. population provided by Census definitions reviewed above, combined with valid information on prevalence rates of substance use among the rural population.

A definition of the term "social" must include the idea of interaction; that is, humans are social because they engage in interactions that are learned and shaped by culture and groups (Rogers et al. 1988). Thus, social costs can be examined as something other than a residual of those phenomena that cannot or have not been measured in monetary terms. As with economic costs, the definition of a social cost begins with the idea of opportunity costs, but it is defined in reference to alterations in patterns of interaction among members of a society that can be attributed to drug abuse. In other words, like money capital, the investment of human resources or human capital is altered by the presence in society of those who use and abuse drugs. These social costs can be assessed on the basis of how drug abuse influences or changes the behaviors of users, of those with whom users directly interact, and, in the broadest sense, of how levels of substance use modify patterns of interaction among people within societies (i.e., changes in social structures). Thus, assessing economic costs deals with changes in the quantities of life, whereas assessing social costs deals with changes in the qualities of life.

A number of locality-specific studies with a focus on drug abuse among various rural populations have been concerned with measuring social costs, although they rarely use the term. Instead, they refer to social costs as problem behaviors, risk-taking, co-occurring behaviors, and consequences of substance use. This approach limits the assessment of social costs to the individual user, although a few studies examine potential costs from the perspective of persons who associate with substance users (Donnermeyer 1992). Rarely does the focus dwell upon social costs beyond the immediate interactional network of those who consume alcohol and other drugs (e.g., how substance use disrupts learning environments in the classroom, increases fear of crime in neighborhoods, or demoralizes the workforce).

Measuring Costs

Admittedly, establishing a clear link between drug abuse and these broader societal-level costs is difficult to do, not only because of the typical problems with establishing cause-and-effect relationships, but also because the task would be daunting, especially in reference to any kind of rural/urban breakdown or comparison. The term "cost" assumes causality, although most of the time researchers drop back and punt by admitting only that certain behaviors appear to be associated with or co-occur with drug use. The problem is that most research is based on smaller scale, locality-specific samples that are primarily cross-sectional in nature or on national-level epidemiologies that lack the kind of theoretical orientation and operationalized measures sufficient to develop and test causal models.

Given the small number of studies of the economic and social costs of substance use among the rural population, the problems discussed above will continue to limit progress. In an effort to stimulate and direct future studies, this chapter will review research on rural drug abuse within the framework addressed in the next section.

A TYPOLOGY OF ECONOMIC AND SOCIAL COSTS

As mentioned earlier, economic resources are scarce. Money spent on illegal substances and on enforcement, prevention, and treatment activities represent allocations that, in a perfect world, could be invested in other ways. These are the economic costs of substance use. In a similar fashion, the use of alcohol and other drugs, reactions from the public to alcohol and drug use, and activities associated with various enforcement, prevention, and treatment functions represent alterations of the interaction patterns among members of society. Thus, there are social costs of substance use associated with disruptions in routine and/or expected patterns of living among substance users, the persons with whom they interact, and society in general.

Having made the distinction between an economic and a social cost, it is equally important to note that they can be assessed together. The costs of drug abuse are simultaneously economic and social; they reflect how limited resources are spent as money capital and as human capital.

Table 1 presents a typology of the economic and social costs of drug abuse. The left column lists four types of economic costs; the right column lists four parallel types of social costs. This typology is based on the distinction between core versus other costs and direct versus indirect costs (Rice et al. 1990).

Direct core economic costs are those directly born by the person using drugs. It includes both the cost of purchasing drugs and the costs of treatment and support for drug-abuse-related disorders. Indirect core economic costs are the costs associated with drug use that are borne by society. This can include the cost to employers for lost output and productivity due to drug use and time spent by employees in drug treatment and rehabilitation services, hospital stays, and drug-related deaths.

Other economic costs are those born by society as it attempts to address the problem of drug abuse through various supply and demand reduction strategies. Other direct economic costs are expenditures for the following: (a) enforcement of substance use and trafficking laws, the prosecution of violators, and incarceration of those who violate these laws or other laws while under the influence of alcohol and drugs; (b) damages due to motor vehicle crashes and other accidents by persons under the influence; (c) the cost of public assistance and social service

TABLE 1. *A typology of economic and social costs.*

Type of cost	Economic cost	Social cost
Direct core	(a) Costs of substances and (b) treatment and support for substance use-related disorders.	Alterations in interaction patterns of substance users, including (a) school performance and dropping out, (b) criminal and delinquent behavior, (c) victimization, (d) family conflicts, (e) conflicts with friends, and (f) problems with work peers.
Indirect core	Lost output and productivity due to drug-related deaths and hospital stays.	Alterations in interaction patterns of persons in direct contact with substance users and emergence/increase of gangs and organized criminal activities associated with the production and distribution of drugs.
Direct other	Expenditures for (a) enforcement/prosecution/ incarceration, (b) damages due to substance use-related motor vehicle accidents and crimes, (c) costs of public assistance/social service programs of persons with drug abuse disorders, and (d) public and private expenditures for prevention and education programs.	Alterations in interaction patterns in response to socially defined unacceptable levels of substance use, including (a) school and other prevention programs, and (b) reallocation of police services to enforcement and prevention activities.
Indirect other	Expenditures for (a) estimated value of productive time lost in criminal careers, (b) lost productivity in caregiving by family members, and (c) lost productivity by victims of crime related to substance use, such as days lost from work.	Societal reactions to substance use, including (a) avoidance behavior and (b) altered perceptions of quality of life.

programs associated with alcohol and drug use problems; and (d) public and private expenditures for prevention and education programs designed to reduce demand. Indirect other economic costs include (a) estimates of the value of productive time lost in criminal careers by those who sell and use drugs, (b) lost productivity in time spent by family members in care-giving activities, and (c) lost productivity of those victimized by crime committed by users and addicts.

This four-part typology can also be used to categorize social costs. Direct core social costs refer to alterations in the interaction patterns of the individual user, including (a) school performance, dropping out of school, and trouble with school authorities; (b) diminished career opportunities and job advancement and other limitations on job opportunities and quality; (c) engaging in criminal and delinquent behavior and trouble with police; (d) victimization due to a drug-using lifestyle; (e) family conflicts with parents and siblings; (f) conflicts with friends and other modifications in a user's network of interpersonal relations; and (g) problem relationships with work peers.

Indirect core social costs are borne by those in the immediate interactional environment of the substance user, including family members, peers, school authorities, colleagues at work, victims (other than the substance user) of motor vehicle crashes, and victims of crime related to drug use, all of whom experience modifications of their interaction patterns as a result of incidents involving substance users. A second group of indirect core costs include the emergence and/or expansion of gangs and other organized criminal activities related to the production and distribution of drugs in rural communities, as well as increased criminal and delinquent activity among those who associate with substance users.

As with the economic counterpart, other social costs go beyond reference to the individual user and those immediately surrounding the user. Direct other social costs include alterations of interaction patterns by individuals and groups in response to socially defined unacceptable levels of substance use. These include school programs to discourage drug-using attitudes and behavior, reallocation of police services to enforcement of drug laws, and prevention/demand-reduction programs such as Drug Abuse Resistance Education (DARE). Other indirect social costs include broader, societal reactions to substance use, including avoidance behavior to reduce risk of exposure to substance users (and groups) and altered perceptions of quality of life in neighborhoods and in society in general.

The four types of economic and social costs are parallel and represent ever-widening ripples on a pond. Despite similarities, however, social costs are not simply the nonmonetary aspects of economic costs, and the economic costs are not merely dollar values assigned to the social consequences of substance use. They are related but independent.

RURAL DRUG USE

Most national-level databases note that prevalence rates for drugs among the rural population are slightly lower, but comparable, to urban rates (although larger differences appear for specific types of drugs). Moreover, Edwards (1994) found that the proportion of highly drug-involved 12th grade students was similar for those from metropolitan, nonmetropolitan adjacent, and nonmetropolitan nonadjacent counties, but lower for nonmetropolitan counties with largest size of place of less than 2,500 persons. Similarly, results from nationally representative samples suggest a growing convergence of drug use between the metropolitan and nonmetropolitan populations (Johnston et al. 1993; Robertson 1994). For example, studies noted little or no rural/urban differences in marijuana use and cocaine use, and rural youth had higher rates of inhalant use. Rural/urban similarities in rates are both longitudinal (the rates are closer in more recent years) and generational (the rates are closer for younger age groups). However, some sectors of the rural population still maintain lower rates of substance use. For example, among adult workers 18 years and over, farmers have one of the lowest prevalence rates for use of alcohol, marijuana, and cocaine when compared to other occupational groupings (Gleason et al. 1991; Voss 1989).

Results from both Monitoring the Future (Johnston et al. 1993) and the National Household Survey on Drug Abuse (Ennett et al. 1993; Robertson 1994) indicate that prevalence rates of drug use declined through the late 1980s and early 1990s. However, drug use declined faster among the urban population than among those living in rural areas. Most recently, drug use rates have risen again, and it appears that both rural and urban prevalence rates have similar rates of increase (Johnston et al. 1993).

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THE ECONOMIC COST OF RURAL DRUG USE

Estimating the economic costs of drug use among the rural population is an impossible task, but "ballpark" figures are possible given several assumptions. The first is that rural prevalence rates are generally not more than 10 percent below comparable urban rates. Second, the estimated rural population ranges between 23 and 25 percent of the total U.S. population, based on the metropolitan-nonmetropolitan and size of place definitions. Together, these two working assumptions help provide a rudimentary understanding of costs when the only solid statistics available are urban-based or are national in scope and do not include rural/urban breakdowns.

The Office of National Drug Control Policy (ONDCP) (1991) published a report estimating the retail value of illicit drugs, or direct core economic costs. Estimates were based on the number of drug users and their levels of consumption from various epidemiology sources and criminal justice statistics. According to the office's estimate, approximately $40 billion was spent in 1990. Can one safely estimate, therefore, that about one-fourth of this total pertains to the rural population? Probably not safely, but it would be a starting point.

One indicator that suggests that such an estimate would be too high is the rural/urban difference in number of drug-related arrests. The retail value of drugs consumed by those in the criminal justice system represents about 75 percent of the $40 billion annual pricetag (ONDCP 1991). According to the FBI Uniform Crime Reports (FBI 1992), in rural jurisdictions arrests for drug law violations are a lower percentage of total arrests, although arrests are relatively higher for alcohol-related incidents. Furthermore, as Beauvais (1992) notes, inhalants use is more prevalent in rural areas, especially among low-income rural groups, because inhalants are cheaper than other drugs. In addition, the wide-open spaces and physical and social isolation of many rural areas affords some residents the luxury of growing their own or manufacturing drugs such as marijuana and methamphetamines. However, another factor that affects such an adjustment (but works in the opposite direction) are anecdotal reports that the street value of illegal substances can be many times higher in rural areas (Donnermeyer 1994). A great deal of the variation in the costs of drugs depends on the type of drug being used (Loretto et al. 1993). The specific nature of the urban/rural environment affects the availability of different types of drugs. For example, in one nonmetropolitan county of Ohio, a local purchase of cocaine will cost the user four times as much as on the streets of Columbus, about 65 miles away.

The Institute for Health Policy (IHP 1993), based on the cost estimation techniques and data provided by Rice and associates (1990), estimated direct core costs of $3.2 billion in 1990 for the treatment and support of drug use-related disorders. Almost 60 percent of these costs were hospital-related stays, mostly short term. Other support costs, which included the services of psychologists, social workers, nurses, therapists, and pharmacists, represented another 27 percent of the total. The IHP noted that there are more than 350,000 visits to intensive care units by cocaine and heroin users annually. Rural areas, however, have fewer medical facilities and services, and rural substance users may have lower levels of access to and participation in these various services. Indirect core economic costs encompass lost productivity due to treatment and rehabilitation therapy, hospital stays, and death. Rice and associates (1990) used estimated lost and reduced earnings of those who died or required hospitalization due to drug use-related disorders. For persons 18 to 64, the amount of lost productivity was $6 billion in 1985. Because rates of use are lower for farmers, rural estimates could well be lower (Gleason et al. 1991; Voss 1989). Conversely, some occupational categories such as mining, logging, and other extractive industries, which are also largely rural based, may exhibit higher drug use prevalence rates and, therefore, substantial loss of productivity from days off (Gleason et al. 1991). Clearly, drug users tend to report high levels of absenteeism due to illness; they frequently skip work, and are often high while on the job (IHP 1993).

Direct other economic costs are those associated with expenditures for several activities. Rice and colleagues' (1990) estimates placed direct other economic costs at $13.3 billion, including expenditures by Federal, State, and local agencies for enforcement, prosecution, and incarceration costs related to drug control in 1985. This included 44 percent for police protection, 10.4 percent for drug interdiction and other supply reduction strategies, 1.3 percent for federally funded drug abuse prevention and treatment programs, 8.3 percent for legal and adjudication functions, and 19.6 percent for local, State, and Federal correction expenditures, as well as other miscellaneous costs. Despite the decline in drug use since 1985, these economic costs have probably increased in light of increased efforts to reduce the drug supply through various interdiction strategies as a response to the public's demand for more action. The cost estimates of Rice and associates do not include the dollar value of private- and public-sector prevention and treatment programs (mostly local) or the estimated dollar value of volunteer-based efforts. The IHP (1993) note that educational and prevention programs in communities smaller than 10,000 are less likely to address illicit drug use.

ONDCP's (1993) estimate of expenditures for drug control in 1991 was $13.4 billion for State and local governments alone. This estimate shows a greater share spent by States, especially for corrections. Table 2 also provides a summary of the costs for 18 rural States based on population density.[1] These States annually spend nearly $1 billion on drug control activities.

TABLE 2. *Expenditures for drug control activities by State and local agencies.*

Type of expenditure*	State	Local	Rural States (local and State agencies)
	(Figures in millions of dollars)		
Total	$6,063	$7,300	$ 995
Police protection	695	3,586	350
Courts only	303	313	33
Prosecution/legal services	195	483	54
Public defense	73	187	19
Corrections	4,342	2,500	471
Education	399	163	51
Other	53	68	17

KEY: * = Estimates in table 2 do not include expenditures by State and local government agencies for health and hospital services.

SOURCE: Office of National Drug Control Policy 1993.

Also included under direct other economic costs are damages due to substance abuse-related motor vehicle accidents and the administrative cost of public assistance and social service programs. Unfortunately, Rice and associates provided estimates on accidents only for alcohol-related accidents because they could find no estimates upon which to develop a figure for drug-related accidents. They calculated only $6 million for welfare and social service administrative costs for drug abuse, compared to $471 million for alcohol abuse. Since drug arrest rates are lower for rural counties (in 1991, the FBI (1992) estimate was 217 drug abuse violations per 100,000 persons, compared to 476 in cities), the rural share of this estimate is less than the 23 to 25 percent range. A valid estimate, however, would have to be based on the origin of residence of persons arrested and estimated lost wages adjusted for the distribution of the labor force into various occupational categories in nonmetropolitan counties and/or rural places. In addition to lost productivity, Rice and associates (1990) estimated the cost of incarceration at $4.4 billion.

Indirect other costs is the final category for economic costs; it includes three different types of lost productivity associated with drug use. Rice and associates (1990) reported a 1985 estimate of nearly $14 billion in lost productivity among career criminals involved in illegal production and distribution of drugs.

The cost of drug-related crime to victims was calculated to be $842 million by Rice and associates (1990). Although violent and property crime rates have risen only slightly according to the National Crime Survey (NCS) (Bastian 1992; Bureau of Justice Statistics 1994), the FBI Uniform Crime Reports (FBI 1992) notes a more rapid rise, especially in violent crime incidents (rape, robbery, and assault) reported to the police. The two sources of national-level crime rate data may appear to be inconsistent, but part of the discrepancy can be resolved by remembering that the NCS includes crime experiences whether or not victims reported incidents to law enforcement (Bastian 1992).

Both crime reporting systems indicate that violent crime and property crime rates are two to three times lower (per capita) in rural communities (Donnermeyer 1994). A report from the NCS indicates that the average cost of a violent crime to the victim (including loss of property, medical expenses, and lost time from work) was $206, including $234 per incident of rape, $555 for robbery, and $124 for assault (Klaus 1994). Although these estimates may seem low, it is because the NCS of victim experiences also estimates that only 23 percent of crimes of violence involve an economic loss. Property crime costs are higher, with an average of $221 for larceny, $834 for burglary, and $3,990 for motor vehicle theft. About 91 percent of property crime victimizations include an economic loss. Only about one-third of crime-related losses are recovered by victims through insurance (Klaus 1994).

Rice and associates (1990) based their estimate of victim's economic loss due to drug-related crime at 64 percent of all economic loss from crime. Assuming that this figure is accurate, then the NCS's estimate of victims' total economic loss to crime of $17.6 billion can be adjusted by size of the nonmetropolitan population (the NCS's definition of rural), the victimization rate, and the percent of loss due drug-related incidents. The resulting figure is an economic cost to the rural population of about $1.8 billion. This is much higher than Rice and associates' (1990) estimate because it includes property loss and medical expenses, which are more legitimately part of direct other economic costs.

Aside from doubts in the confidence of various procedures for estimating the economic impact of drug use in rural areas, the figures that could be derived based on the evidence presented in this chapter suggest that the total is in the tens of billions of dollars. There is often a tendency for scientists and policymakers to ignore rural America when the discussion turns to crime-related issues. There will probably always be large metropolitan areas with crime and substance abuse problems that on a per capita basis far exceed all rural communities. However, cross-sectional comparisons are somewhat unfair, especially when the worst urban situations are used as benchmarks for assessing rural communities and lead to the false conclusion that there is no problem. Unfortunately, a more appropriate historical analysis is not possible because trend data simply do not exist on the economic and social costs of rural drug use. However, the various sources cited above point to ways more robust and complete economic assessments could be accomplished.

THE SOCIAL COSTS OF RURAL DRUG USE

Simply put, national-level summaries of social costs from rural drug use are not available. However, there have been a large number of locality-specific studies; unfortunately, nearly all focus on only one type—direct core social costs.

Research has found specific linkages between drug use and a variety of other problems, including:

- School performance and dropping out of school (Fagan and Pabon 1990; Jajoura 1993).

- Criminal and delinquent behavior (Caces et al. 1991; Chavez et al. 1989; Dembo et al. 1993; Elliott et al. 1989; Jensen and Brownfield 1986; Lauritsen et al. 1992; Spunt et al. 1990).
- Victimization (Dembo et al. 1993; Lauritsen et al. 1991, 1992).
- Family conflicts (Ashley 1989; Taylor 1990; White and Bates 1993; Windle 1993).
- Conflicts with friends (Pavkov et al. 1993; White and Bates 1993).
- Problems with work peers (Anglin 1994; White and Bates 1993).

The link between these problem behaviors and drug use represent direct social costs. In cases where rural-based research is available, the links are the same as those found for urban-based studies, although conclusions about these relationships in rural areas must remain tentative because of the paucity of rural-based studies (especially of the adult population). In addition, the extent to which variations in rural areas (and, as well, variations in urban areas) enhance or weaken these relationships is not known.

Schools are an important arena in which rural drug use costs can be assessed, especially among adolescents. Not only is the school environment an important social context for young people, but school performance is related to many other life events. Rural-based studies find the same pattern as urban-based studies; that is, there is a clear association between drug use and a lower grade point average (Bloch et al. 1991; Wolford and Swisher 1986), lower participation in extracurricular activities (Gibbons et al. 1986; Wolford and Swisher 1986), and less time spent with homework assignments (Gibbons et al. 1986; Wolford and Swisher 1986).

Rural studies confirm the relationship between marijuana and hard drug users with criminal offending. For example, Donnermeyer and colleagues (1987), Gardner and Shoemaker (1989), and Lalinec-Michaud and associates (1991) found that adolescent substance users were more likely to be involved in property offenses (including vandalism), violence, and juvenile status offenses (such as driving without a license). Elliott and coworkers (1989) also found a relationship between drug use and delinquent behavior among both metropolitan and nonmetropolitan youth.

There has not been much rural-based research linking drug use and victimization; however, there is no reason to assume that the relationship would be any different. In one study, Edwards (1994, p. 89) found that the "links among gang involvement, drug use, and violence hold true regardless of community size." In like fashion, only two studies with rural samples have examined the relationship between trouble with family and friends and drug use (Bloch et al. 1991; Duncan 1991). In both cases, the relationships were statistically significant.

A few scholars have reexamined the relationship between regionalism and cultures of violence. Rural Appalachian and southern cultures, as well as remote areas of the west, can exhibit unusually high rates of violence, spouse abuse, and child abuse (Gagne 1992; Nisbett 1993; Owen et al. 1993), and it is reasonable to hypothesize that drug use plays a role in these problem behaviors. This potential relationship was not examined, and additional research on this topic is needed. Finally, drug use associated problems in rural workplaces also remains to be studied.

Despite the various disclaimers about the lack of rural-based research concerning direct core social costs, the problem is comparatively worse for the other three types of social costs. Indirect core social costs refer to alterations of interaction patterns by those in contact with drug users, as well as rural offenders who become more closely linked to organized crime networks. As both Sarvela and colleagues (1988) and Peters and coworkers (1992) conclude, rural youth obtain information about drugs in the same ways as do urban youth (i.e., largely from drug-using friends and the media). These youth, in turn, are more likely to use drugs themselves. In addition, Donnermeyer's (1992) review of rural-based research on substance use found a number of studies that note the influence of peers in encouraging attitudes and behaviors favorable to drug use. The NCS found that rural youth were slightly more likely than students from central city and suburban counties to report the availability of drugs in school. In addition, students from nonmetropolitan counties were as likely to report fear of attack and avoidance of certain places in school as were their urban counterparts (Bastian and Taylor 1991). Because rural schools are generally smaller, students could be more susceptible to the influence of cliques who either encourage or discourage drug use. In contrast, larger urban schools provide more social niches, that is, interactional buffers in which some students would not be influenced by more dominant peer groups.

Beyond the school environment, families of substance users, especially children, are affected (IHP 1993). However, rural-based research on the impact of drug use by one family member on others is virtually non-existent, save for studies that find a relationship between use by parents and their adolescent offspring (Brody 1987; McIntosh et al. 1979).

Research by Donnermeyer (1994) indicated the rapid emergence of gangs in many rural communities. Some gangs have branched out from the city into nearby rural areas or use rural communities near interstate highways as drug production and distribution centers. Once established, these gangs take over the local retail market for drugs as well. However, gangs are also emerging in rural areas far removed from these urban influences, and local dealers and gang leaders are becoming linked into urban-based drug networks that frequently use violence as an organizational tactic. For example, there have been several reported cases of drive-by shootings in small rural communities of South Carolina, and the perpetrators were local youth who had lived there all their lives. The victimization survey of school students found that only 8 percent of students from nonmetropolitan areas reported a gang presence in their schools, compared to 25 percent in central city counties. However, the data for this study were collected in 1988 (Bastian 1992).

Donnermeyer's (1994) study of gang emergence in rural areas found that nearly all responding rural police agencies indicate that only since 1990 have they found physical and criminal evidence of local gang activity. A similar school-based victimization study today may find the kind of rural/urban convergence in gang activity previously noted for drug use. A study of small communities schools in rural Texas found levels of violence and drug use that exceeded national averages (Kingery et al. 1991). In addition, the study noted that many of the boys carried knives and handguns to schools.

The implementation of school-based and other prevention programs and changes in police resources and manpower to enforce drug laws and carry out prevention activities represent two types of direct other social costs. The national school survey revealed that a greater proportion of students living in nonmetropolitan counties than in metropolitan counties had attended school-based drug education programs. A national study of sheriffs found that more than 40 percent indicated that arrests for drug offenses, processing asset forfeitures from drug cases, and implementing programs to reduce drug use in the community were of major importance in changing workload assignments of deputies and other personnel

(Institute for Law and Justice, Inc. 1990). In addition, 85 percent of responding sheriffs departments have indicated implementation of DARE programs (which involves a substantial time commitment by an officer in the school), 78 percent have increased "street-level buy-bust" activities, and nearly 60 percent have increased personnel for narcotics investigations.

Indirect other social costs were defined as including altered perceptions and behaviors of the population associated with trends in substance use. These are very difficult to assess, and rural-based research on the link between changes in rural society and drug use simply does not exist. However, it is clear that fear of crime among rural residents is increasing, and, curiously, residents living in the open-country and farm areas exhibit the highest rates of fear because they realize that their geographic isolation makes them more vulnerable (Lee 1982; Weisheit et al. 1994). In contrast, residents of rural towns (generally greater than 2,500 but less than 10,000) have fear levels that are as low as those of suburban areas, where people feel the safest of all. There is one fundamental difference in perceptions of crime that may soon end: Although rural people are as likely to feel unsafe in their homes as urban dwellers, they feel more secure walking alone at night in their neighborhood than urban residents. This difference reflects the relative lack of street crimes in rural environments, which could change if drug-related gang activity takes on a greater presence in rural communities. As it stands now, when rural residents practice any form of avoidance behavior, it is of urban areas where they perceive crime, drugs, and violence to be much more prevalent (Weisheit et al. 1994).

CONCLUSIONS

The purpose of this chapter was to suggest ways in which the economic and social costs of drug use among the rural population could be assessed. By necessity, the chapter was exploratory and limited by both the relative paucity of rural-based research on drug use and the limited amount of research on many aspects of economic and social consequences.

The thesis of this chapter was that the first step toward developing more systematic research on economic and social costs is the development of a typology reflecting various kinds of costs. This was necessary for two reasons. The first was to differentiate between the concepts of economic costs and social costs. The second was to define costs as alterations in the way scarce resources are used (i.e., economic costs) and alterations in the interaction patterns of individuals groups and society (i.e., social costs) that can be attributed to drug use.

Costs were then divided into four types (see table 1), beginning with consequences for drug users (i.e., direct core). The second type was indirect core, which referred to economic and social costs incurred by those in contact with substance users such as family members, coworkers, and peers. The third type included costs associated with agencies (e.g., police agencies, social service agencies, and schools) that reallocate economic and social resources to address drug use (i.e., direct other). Finally, the fourth type of costs are those incurred by society as it adjusts and reacts to drug use (i.e., indirect other).

What is the next step? The answer is to fill in the gaps by attempting to estimate the economic and social costs of drug use for the rural population. This second step includes examination of differential economic and social costs based on various demographic subgroups such as gender, age, and race. In addition, it must be determined whether differences exist in the costs of drug use by features associated with different kinds of rural communities, including variations based on characteristics such as region, economic composition, ethnic group and race composition, population increase/decrease, and other factors.

One important point is that development of a model predicting the economic and social costs of drug use will probably not look the same as the model that predicts drug use. Obviously, there will be some similarities, especially in predicting the first type of cost (direct core economic and social costs), because for both models the individual as the substance user is the unit of analysis or point of reference. The other three types of costs look to other issues because the unit of analysis is at the level of the group and the community, not the individual user.

Ultimately, society's norms and values define both economic and social costs, as the current debate over legalization and decriminalization of laws prohibiting production, trafficking, and consumption of substances illustrates. Assessment of these costs becomes part of the policymaking process of government, and it is this mix of defining problems and proposing solutions that researchers often refer to as the political economy. Public perceptions at this point are that drug use, gangs, and violent crime are the most important issues facing American society (Donnermeyer 1994). But the costs of prevention and treatment programs have limits that are also socially defined. With or without accurate and empirically based information, the general public, voters, and politicians will make decisions about levels of spending on various demand- and supply-reduction strategies.

Stereotypes about rural areas as crime-free environments, despite evidence to the contrary, persists in the minds of many, and are reinforced by media stories that consistently focus on the worst-case scenarios from inner-city areas. Further contributing to this myopia is the unwillingness of leaders in many rural communities to come to grips with the reality that substance use affects young people and families in their neighborhoods. The tendency is to practice the NIMBY (not in my backyard) syndrome, which says, "My community is O.K., but you should see some of the problems that the town down the road from us is experiencing." Obviously, these attitudes make it difficult for the local community to understand the true extent of economic and social costs and to support appropriate strategies to address the problem. As long as information on the economic and social costs of drug use remains vague, researchers will be ineffectual in changing attitudes that, in turn, affect policy on enforcement, prevention, and treatment strategies and resources devoted to rural areas.

NOTE

1. In addition to the metropolitan/nonmetropolitan and size of place definitions of rural, some researchers divided the States into rural and urban on the basis of population density. The criterion of 50 persons per square mile is used to classify States into either category. There are 18 rural States including: Alaska, Arizona, Arkansas, Colorado, Idaho, Iowa, Kansas, Maine, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Wyoming. The reader immediately notices that several of these States have sizable urban population centers and that a large share of the population lives in these centers, with the remainder of the State being largely uninhabited (such as Arizona, Colorado, and Utah). In addition, most of the 18 States are in the western region. Few States east of the Mississippi River, where the largest share of the rural population is located, are included.

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ACKNOWLEDGMENT

Support for development of this paper was provided by the Ohio Agricultural Research and Development Center, College of Food, Agricultural and Environmental Sciences, The Ohio State University, and the Tri-Ethnic Center for Prevention Research, Colorado State University (NIDA grant no. P50 DA07074).

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Introduction: Interventions and Services

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Public concern over the problem of drug and alcohol use and abuse has resulted in a national outcry for more and better interventions and services to prevent, slow the initiation and progression of, and remediate problems associated with the use of substances, especially among children and adolescents. A large array of programs and mechanisms has been generated to address these issues, ranging from very simple, one-time interventions in a single locality to widely accepted programs offered through national networks of service providers. One commonality across these interventions and services is that consistent and comprehensive evidence of availability and effectiveness is scant. The chapters in this section point out that many problems encountered in providing interventions and services to urban and suburban dwellers appear to be magnified when provided in rural areas. Qualities of the rural population, landscape, and economy appear to create problems in investments in and delivery of interventions and services.

The chapters in this section explore the impact of these and other issues on interventions and services in rural areas. The first three chapters provide complimentary discussions of prevention programming. The first focuses on prevention of alcohol use, the second on prevention of illegal drug use, and the third on dissemination of prevention programming information. The fourth chapter focuses on health care delivery and treatment in rural areas.

The three prevention chapters point out in various ways that the lack of knowledge concerning the epidemiology and etiology of substance abuse in rural areas hinders informed decisions regarding prevention activities. In an expansive review of the literature, D'Onofrio reports that patterns of youthful alcohol use are similar across areas defined by population density. Moreover, based on the limited evidence available for rural youth, D'Onofrio concludes that the factors associated with use including age of initiation, peer and parental influences, personality traits, and school problems are similar to those found for urban youth. Biglan and colleagues question whether peer group and family behavior antecedents of drug use among urban and suburban youth can be the basis for designing programs for rural youth. Using rural data, the authors test a model that includes these two factors; their findings indicate that the associations between these areas of human relations and substance use are similar for rural and urban youth.

Despite these similarities in epidemiology and etiology across urban, suburban, and rural populations, D'Onofrio, Biglan and colleagues, and Karim all point out that there is no evidence that programs and services designed for more urbanized groups can be transferred intact to rural settings. In fact, they find no consensus on the implications of research findings for rural prevention. Some researchers advocate broad-based multifaceted approaches that can be applied in any setting, whereas others advocate customized prevention programs. A major criticism of prevention programming in general is the absence of a focus on community and other environmental characteristics. This criticism is especially interesting in light of Karim's position that the local context should drive the development and design of prevention programs. That is, ethnographic methods should be employed to gain an understanding of local attitudes, beliefs, and social behaviors surrounding substance use. From this understanding the community will have the necessary background to design, develop, and deliver the most effective program for that locale.

Biglan and colleagues also discuss the role of the local community in the prevention process, stating that the most effective prevention strategy for rural areas is a comprehensive community approach that addresses adolescent substance use and all other problems of youth in a set of coordinated family, school, and community programs. The authors place special emphasis on the role of the community and schools in supporting parents in their roles as parents. The shift in family structure from single earner to dual-earner out-of-home employment has resulted in a serious gap in parental monitoring and nurturance. Biglan and colleagues advocate for community programs designed to fill this void with activities that enhance prosocial development, including skill development and training in the use of appropriate social interaction strategies. However, D'Onofrio points out that programs that have included elements of this approach have not been successful in deterring youthful alcohol consumption. Perhaps, as Biglan and colleagues suggest, the key to success is the integration of programs across settings.

All three prevention papers view the school as the primary vehicle for prevention programming for the obvious reason that children spend a great deal of time in school. The chapters by both Biglan and colleagues and Karim discuss the need for school reform if school-based programs are to become more effective disseminators of prevention information. Biglan and colleagues view school success as the first line of defense against substance abuse because it allows youngsters to stay focused on reinforcing activities that enhance development. The authors cite evidence for a type of instruction that has been very successful in fostering academic success among high-risk populations, the mastery learning model and direct instruction.

Karim takes a different view on the effectiveness of the educational setting as an arena for youth development and prevention. That is, Karim places importance on the political and cultural relevance of education to the young people it targets and on recognizing the importance of youths' social contexts in the creation of meaningful messages. Specifically, Karim advocates for educational practices that foster the development of higher order thinking skills. Further, Karim states that the educational forum must be made as interesting and challenging as mass media if it is to capture the interest of youth. The understanding that no single approach is appropriate for all audiences is a valuable lesson for both prevention programming and school reform.

The second primary setting for prevention programming is the home. D'Onofrio and Biglan and colleagues stress the importance of parents in the delivery of direct and indirect prevention messages (e.g., their role in the positive socialization of children, the models of substance use behaviors they provide, and the direct interactions and messages they give concerning substance use).

The previous summary of similarities across the three prevention chapters points out that they address many of the same issues; however, each brings to the discussion a unique perspective. D'Onofrio's chapter provides a comprehensive review of the literature on rural substance abuse and prevention programming. Biglan and colleagues provide a blueprint for a holistic, community-based intervention strategy. Finally, Karim argues for the relevance of prevention programming to the audience for which it is designed.

The remaining chapter (by Wagenfeld and colleagues) in this section describes the mental health services system in rural settings. Substance abuse treatment and intervention services are only one aspect of this system, but their existence and success are influenced by the same factors. Many problems associated with these factors can be categorized under the general heading of economy of scale. In general, specific programs and services provided in rural areas influence fewer people than those offered in more urbanized areas. At the same time, they may actually have a greater impact through affecting the quality of life of a higher proportion of people in a particular community or area. This point suggests an important implication for studies of treatment and prevention program effectiveness. That is, because many rural communities are small, isolated, and have few services and programs available to residents, they can function as natural laboratories for testing effectiveness of programming among groups with defined characteristics.

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The Prevention of Alcohol Use by Rural Youth

Carol N. D'Onofrio

Little is known about preventing alcohol use by youth in rural America. Because most studies of teenage drinking and related prevention programs have been conducted in metropolitan areas, the word "rural" is relatively rare in the extensive alcohol prevention literature. Although descriptions of rural programs can be found, like the rural population itself, these are sparse, scattered, and heterogeneous. Almost no rural alcohol use prevention programs have been evaluated (Wargo et al. 1990).

This situation makes it difficult to determine what works in preventing alcohol use by rural youth, the extent to which rural prevention needs are being met, and whether prevention resources are optimally deployed in rural areas. Ironically, these deficiencies also confound the development of research and policy initiatives to build a more adequate knowledge base for decisionmaking about rural prevention efforts.

To address these dilemmas, this chapter critically examines the issue of alcohol use by rural youth within a public health framework. The literature is reviewed to identify what is known about the prevalence, consequences, and causes of rural adolescent drinking. An overview of current prevention efforts is then provided. Next, the match between problem and solution is assessed to reveal gaps in knowledge about rural teenage drinking and discrepancies between available knowledge and current prevention practice. Recommendations for policy and research flow from this analysis.

Given the complexity of the subject matter and methodological issues in approaching it, the purpose of this chapter is not to provide the definitive diagnosis of a neglected problem, but rather to stimulate more attention to it. As additional sources of relevant information are identified and as new knowledge is generated, policymakers, agency administrators, concerned citizens, program developers, and members of the research community will need to update this review, conduct their own analyses, and reach their own conclusions. The analytic framework that follows may assist with that task.

SOURCES OF DATA AND THEIR LIMITATIONS

Alcohol use involves many behaviors and behavioral patterns, but data on drinking by rural youth are largely limited to cross-sectional measures of lifetime and 30-day use prevalence, as well as frequency of heavy drinking within the past 30 days. Much less information is available about age of first use, frequency of drinking, types of alcohol consumed, and settings where drinking occurs. Data on the development of drinking practices and alcohol-related problems over time are generally lacking.

Methodological weaknesses in available data further impede the development of a comprehensive national picture of alcohol use by rural youth. Sampling of rural regions and youthful age groups is not consistent. Use of single school or community sites for many studies limits generalizability. Collection of data with nonstandardized questions restricts comparisons of results from different studies. Methods of data analysis vary widely in sophistication. Some research reports do not consider the independence of samples, limitations imposed by small numbers, or the proportion of statistical tests likely to be significant by chance alone. Causality is often inferred from cross-sectional correlations.

Moreover, most studies are based on youthful self-reports of drinking. Although these measures appear to be reasonably valid (Campanelli et al. 1987; Johnston and O'Malley 1985; Malvin and Moskowitz 1983; Oetting and Beauvais 1990; Polich 1982; Single et al. 1975; Smart and Jarvis 1981), both over- and underreporting can occur (National Institute on Alcohol Abuse and Alcoholism (NIAAA) 1990; Oetting and Beauvais 1990; Werch et al. 1987). The extent to which this happens may vary with age, gender, mode of data collection, and social desirability biases in the survey situation; several investigators have observed that such biases may be more prevalent in rural than urban areas (Kelleher et al. 1992; Pandina 1986; Wargo et al. 1990; White and Labouvie 1989).

These difficulties are exacerbated by disparities and ambiguities in the definition of rural throughout the alcohol prevention literature. Many reports fail to define the term. Some rely on the definition set forth by the National Institute on Drug Abuse (NIDA) in 1980: Any community outside a standard metropolitan statistical area (SMSA) with a population less than 25,000 is rural (NIDA 1980). Other investigators use the Bureau of the Census designation of metropolitan statistical area (MSA)[1] to differentiate between urban and rural: MSAs have a population of at least 100,000 (75,000 in New England), including one or more central cities with at least 50,000 residents and adjoining areas that are socially and economically related to the central city. Areas that do not meet these criteria are considered "nonmetropolitan" (Bureau of the Census 1989).

The Census Bureau has a different definition of rural: places with fewer than 2,500 residents and open country outside urbanized areas (Census Bureau 1978). In 1989, approximately 22 percent of the U.S. population lived in nonmetropolitan areas and about 27 percent lived in rural areas as defined by the Census Bureau, but only 15 percent of the population was rural by both definitions (Braden and Beauregard 1994).

Observing that Congress has introduced legislation using the concept of rural States as well as rural areas, the General Accounting Office (GAO) now employs yet another definition: A rural State is "one of 18 States with a population density of 50 persons or fewer per square mile" (Wargo et al. 1990).

The following review operationally defines rural as source data permit. Otherwise, the term loosely means nonurban. However, because rural America is not homogenous, the criteria used to define rural and urban often determine the results of a study (Hewitt 1989). Given this and other methodological concerns, the reader is advised to proceed with caution.

National Surveys

Two ongoing national surveys report data on adolescent alcohol use. Since 1971 the National Household Survey on Drug Abuse (NHSDA) has periodically provided cross-sectional data about the prevalence of alcohol and other drug use for the U.S. household population and four age groups, including youth 12 to 17 years of age. Monitoring the Future, an annual school-based survey, has provided similar data for high school seniors since 1975 and for 8th and 10th graders since 1991. Perhaps due to underreporting in face-to-face interviews and difficulties in reaching some households, rates of youthful drug use yielded by the NHSDA are slightly lower than those found in Monitoring the Future, but overall results are quite similar (Oetting and Beauvais 1990).

Both surveys report drug use by population density or community size, operationally defined as large, small or other, and non-MSAs. The latter designation lumps together small communities, rural nonfarm areas, and rural farm areas where both patterns of drinking and factors influencing these patterns may differ. Another limitation of national surveys is that data on drinking by population density are typically reported only by age group, and not by gender, race, region, and use of other substances. Even if such multivariate analyses were made available, local differences in youthful drinking would be impossible to distinguish within the nonmetropolitan classification. As Patton (1989) has pointed out, data from larger nonmetropolitan cities may overwhelm data from smaller, less-populated, or remote frontier communities.

National surveys also have been criticized because they tend to underrepresent young people most at risk for drinking. Thus school-based surveys, including the annual survey of high school seniors, do not reach school dropouts and absentees. Surveys employing household interviews, such as the NHSDA, miss runaways and homeless youth. Until recently, the NHSDA also excluded persons living in institutionalized settings; however, beginning in 1992, sampling included people living in some group quarters, such as college dormitories and homeless shelters. Neither national survey obtains data from transient youth or those in prisons and jails.

State Surveys

Some States conduct surveys of alcohol use by youth, but little is known about the methodologies employed and findings are seldom published in the scientific literature. When data are published, urban/rural differences may not be reported (e.g., Palmer and Ringwalt 1988). Where this is not the case, methodological problems sometimes limit the value of State survey findings. In California, for example, the 1989 to 1990 Biennial Survey of Drug and Alcohol Use among California Students in Grades 7, 9, and 11 reported results for six regions, two of which included mostly rural counties (Skager et al. 1990). Students in one of these rural regions said they consumed significantly more beer, wine, and spirits than students in other regions, including the other rural region where reported alcohol use was among the lowest in the State. However, alcohol use was measured by a nonstandard variable that treated ordinal categories as an interval scale and that confounded any use in the last 6 months with frequency of use.

Regional and Local Studies

University-based researchers have conducted studies of alcohol use by rural youth in a number of small communities and rural school districts. These investigations typically have tested the relationship of selected psychosocial variables to drinking behaviors of young people. A few local studies also have tested the effects of a prevention program, usually newly developed. Such investigations, both with and without interventions, differ greatly in the variables employed, their operational definitions, sampling, methods of survey administration, analytic procedures, and overall methodological quality. Findings therefore are rarely comparable, and generalizability of results is questionable.

Data on Consequences of Alcohol Use

Few studies report data on the consequences of alcohol use by rural youth, and most of these rely on self-reports subject to perceptual and memory bias. Other indicators are seldom available for rural areas or are subject to methodological limitations (NIAAA 1990). For example, State statistics on alcohol-related motor vehicle crashes that might be used to estimate consequences of drinking for rural youth are affected by major differences among the States in the degree of testing for driver and nonoccupant blood alcohol concentrations (National Highway Traffic Safety Administration (NHTSA) 1993*b*). Studies attempting to elucidate the role of alcohol use in interpersonal violence have been flawed by reliance upon convenience samples; cross-sectional research; nonstandardized measures of drinking; inadequate hypotheses; and separate examination of sociological, psychological, and biological variables (Collins and Messerschmidt 1993; Pernanen 1993). Alcohol-related diagnoses are underreported in medical records (NIAAA 1994*b*).

Data on Alcohol Prevention Programs for Rural Youth

Few reports of programs aimed at preventing alcohol use by rural youth appear in the scientific literature. A review of rural alcohol and other drug prevention strategies cited only 21 reports published between 1978 and 1991. Ten of these papers presented data on alcohol and drug problems in rural areas and two concerned sources of drug information reaching rural students, leaving just nine that described actual rural prevention efforts (Laws 1991). Library searches yield a few more published program accounts, as well as summary descriptions of demonstration projects funded by the Office of Substance Abuse

Prevention (OSAP), Center for Substance Abuse Prevention (CSAP) (1994; OSAP 1990), or other sources (e.g., GAO 1992*a*).

Data collected during the 1990-91 academic year from a stratified random sample of 211 school districts that do not serve a MSA provide a good overview of school-based drug education programs in rural areas (GAO 1992*b*). However, this survey treated drug education generically without distinguishing efforts specifically aimed at the prevention of youthful alcohol use. Monographs, books, newsletters, teachers' manuals, and organizational guides on substance use prevention usually do not address the particular needs of rural areas, but occasionally a program for rural youth is highlighted. The ERIC database maintained by the Department of Education contains summaries of some additional rural substance use prevention programs.

As might be expected, the programmatic information available from this range of sources is uneven in content and quality. Many articles refer to substance use prevention without defining the particular substances targeted. Program objectives are often undefined. Reasons for initiating the program and its underlying rationale frequently are not explicit. Similarly, information is not consistently provided about program organizers and leaders, the number and characteristics of youth involved, the prevention methods utilized, program duration, and budget. Neither the completeness nor the representativeness of the program descriptions assembled can be readily determined. Evaluation of program effects on youthful alcohol use is notably lacking in all but a handful of reports.

ALCOHOL USE BY RURAL YOUTH

Epidemiologic studies of alcohol use prevalence, consequences of alcohol use, and related risk factors enable preventive efforts to be targeted to areas of greatest need. Unfortunately, only scant data are available on patterns of alcohol use among rural adolescents, and even less is known about the consequences of their drinking behaviors.

Use Prevalence

Alcohol is the drug most widely used by youth, rural and urban alike (Johnston et al. 1993; Kelleher et al. 1992; Napier et al. 1984; NIDA 1991; Oetting and Beauvais 1990; Wargo et al. 1990). Comparisons of alcohol use prevalence among urban and rural adolescents have yielded mixed results. A number of general population studies completed between 1979 and 1991 found higher rates of youthful alcohol use in urban than in rural areas (Gleaton and Smith 1981; Johnston et al. 1979; Kandel 1980; Martin and Pritchard 1991; Napier et al. 1981; Zucker and Harford 1983). However, some studies have reported higher drinking rates among rural youth (Hahn 1982; Skager and Fisher 1989), while other research on youthful alcohol use has revealed few or no urban/rural differences (Elliott et al. 1989; Farrell et al. 1992; Oetting and Beauvais 1990; Swaim et al. 1986).

Reviewing many of these studies, Johnstone (1994) attributed their inconsistency to methodological issues and suggested that the observation of urban/rural differences in adolescent drinking may vary largely on the basis of the alcohol measure used for comparison. However, examination of national survey data suggests that disparities in results also may be due to cross-sectional measurement of drinking trends at different points in time.

The Monitoring the Future surveys of high school seniors show that nationally, youthful use of alcohol and most other substances peaked in 1979 and then began a gradual decline that continued through 1992. Alcohol use prevalence among rural youth mirrors this trend, but with less fluctuation than in urban areas. Thus, while current use of alcohol by high school seniors dropped in all areas between 1980 and 1992, the decline in large cities was nearly double that observed in nonmetropolitan areas. Consequently, urban/rural differences in 30-day alcohol use prevalence have narrowed considerably in recent years, and, as table 1 reveals, in 1992 the rate of current alcohol use among seniors was somewhat higher in rural than urban areas (Johnston et al. 1993).

Table 2 shows that by 1993 differences among seniors in monthly alcohol use prevalence by population density effectively disappeared. This table also shows little variation in reported drinking by eighth graders living in communities of different size. However, 30-day alcohol use prevalence was higher among 10th graders in nonmetropolitan areas than among those residing in cities and suburbs (Johnston et al. 1994).

Data from the NHSDA surveys reveal a similar pattern. Table 3 summarizes 30-day alcohol use prevalence by population density for youth 12 to 17 years of age and for young adults ages 18 to 25 from 1985 through 1993. As do the Monitoring the Future surveys, the NHSDA data show that the proportion of adolescents who drink has

TABLE 1. *Percent of high school seniors who used alcohol in past 30 days, 1980 and 1992, by population density.*

	1980	1992	% Change
Large MSAs	78	49	-29
Other MSAs	71	51	-20
Non-MSAs	69	54	-15

SOURCE: Johnston et al. 1993.

TABLE 2. *30-day alcohol use prevalence among 8th, 10th, and 12th graders by population density, 1993.*

	8th grade	10th grade	12th grade
Large MSAs	24.7	40.9	52.3
Other MSAs	27.6	38.8	49.8
Non-MSAs	25.1	47.0	51.9

SOURCE: Johnston et al. 1994.

declined over time, especially in large metropolitan areas, and that with this change, differences in youthful alcohol use by population density have diminished. The 1992 drop in current teenage drinking resulted in nearly identical use prevalence rates in urban, suburban, and rural areas.

Although the proportion of youth reporting current alcohol use increased in 1993, prevalence rates in metropolitan and nonmetropolitan areas rose in tandem. Data from both national surveys thus reveal only small differences in the proportions of rural, suburban, and urban youth who have used alcohol in the past month.

The NHSDA surveys show that regardless of community size, persons 18 to 25 years of age drink at a much higher rate than school-age adolescents. Although drinking rates in this age group also have declined over time, in 1993, older youth and young adults used alcohol

TABLE 3. *Percent of persons ages 12-17 and 18-25 reporting alcohol use in past 30 days by population density, 1985-1993.*

	1985	1988	1990	1991	1992	1993
Ages 12-17						
Large metro	33.5	25.4	23.9	21.1	15.1	17.8
Small metro	28.6	26.7	26.7	20.8	16.3	18.1
Nonmetro	29.6	23.1	22.8	18.5	15.9	18.3
Total	31.0	25.2	24.5	20.3	15.7	18.0
Ages 18-25						
Large metro	73.4	71.4	67.7	65.0	61.2	58.5
Small metro	69.0	61.4	63.0	66.2	58.8	58.4
Nonmetro	67.0	59.1	53.7	57.4	56.1	62.4
Total	70.7	65.3	63.3	63.6	59.2	59.3

SOURCES: SAMHSA 1993*b*, 1994.

in the past 30 days at more than triple the rate of teenagers in all strata of population density. Also in that year, for the first time, current alcohol use prevalence among older youth and young adults was higher in nonmetropolitan than in metropolitan areas (NIDA 1991; SAMHSA 1993*a*, 1993*b*, 1994).

The GAO reports that surveys of student alcohol and drug use conducted by several rural States are generally consistent with Monitoring the Future results. However, 1988 data from surveys in Iowa, Montana, and North Dakota indicate that in at least the latter two States, 30-day alcohol use prevalence among seniors was higher than the national average (71 percent and 79 percent, respectively, versus 64 percent). The proportion of Iowa

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seniors using alcohol in the past month ranged from 50 to 70 percent (Wargo et al. 1990).

The best published data on alcohol use by youth living in areas that meet the Census Bureau definition of rural come from a 1988 convenience sample of 30 communities with populations under 2,500 and located 20 or more miles from an urban center (Oetting and Beauvais 1990). Lifetime prevalence of drinking and being drunk, the only alcohol measures reported, are shown by grade level in table 4.

Oetting and Beauvais (1990) observed considerable differences between communities in the prevalence of adolescent drinking. Swaim and colleagues (1986) also found different lifetime alcohol use prevalence rates among 12th grade students living in three rural Rocky Mountain communities. Kelleher and associates (1992) have demonstrated that the drinking practices of sixth, seventh, and eighth grade Arkansas students vary between rural regions of the same State.

TABLE 4. *Lifetime prevalence of alcohol use and getting drunk in 30 rural communities, by grade level.*

Grade level	Lifetime alcohol use prevalence	Lifetime prevalence of getting drunk
4th (N = 791)	22.8	3.3
5th (N = 1,531)	33.6	4.2
6th (N = 800)	39.5	10.2
7th (N = 11,175)	65.8	19.5
8th (N = 26,587)	77.2	32.6
9th (N = 13,693)	83.3	44.7
10th (N = 14,529)	87.4	57.3
11th (N = 10,369)	91.7	67.7
12th (N = 26,720)	93.4	75.0

SOURCE: Oetting, E.R., and Beauvais, F.

Other studies report high rates of alcohol use among rural youth in particular communities and regions. For example, a survey of eighth grade students in two rural Maryland counties revealed that 71 percent consumed beer or wine experimentally or frequently and 28 percent drank whiskey or hard liquor (Alexander and Klassen 1988). Sixth and seventh grade students in rural northern Michigan and northeastern Wisconsin have reported alcohol use rates more than triple the national average for similar age groups (Sarvela and McClendon 1987*b*). And Perry and coworkers (1993) have observed that youth in northeastern Minnesota are at very high risk for alcohol-related problems compared to the rest of the State.

Heavy Drinking

As with data on alcohol use prevalence among rural youth, findings about heavy drinking have been uneven. Globetti and colleagues (1978) reported that rural youth drink less frequently than urban adolescents, but in a more abusive manner. A 1977 survey in Indiana found that rural high school students consumed beer more often and drank both beer and wine in larger quantities than their urban counterparts. More rural than urban students also reported that they needed "7 to 8 beer drinks to get high" (Hahn 1982, p. 254). Sarvela and McClendon (1987*b*) found that middle school students in upper Michigan were much more prone to abusive drinking than the national average. In contrast, data from a national sample of adolescents measured three times between 1976 and 1983 revealed that rates of problem drinking were consistently higher in urban than rural areas (Elliott et al. 1989).

Analyses of data from community surveys led Oetting and Beauvais (1990) to suggest that problem drinking by youth may concentrate in low status or stigmatized population enclaves in core metropolitan areas or rural reservations. Based on self-reports of at least weekly drinking and an average consumption of three or more drinks on each occasion, Blum and associates (1992) classified 10 percent of Native American and Alaska Native youth living in reservation communities as potential problem drinkers.

Others have observed that abusive drinking is endemic among rural youth (e.g., Globetti et al. 1978; Napier et al. 1981; Sarvela and McClendon 1987*a*), and these reports are substantiated by data indicating that heavy drinking in this population is common. In 1992, nearly one-third of high school seniors living in nonmetropolitan areas reported binge drinking, defined as five or more drinks in a row on a single occasion (Johnston et al. 1993). And as table 5 shows, in 1993 the Monitoring the Future survey found that the proportion of 8th, 10th and 12th graders who reported being drunk in the past 30 days was inversely related to community size (Johnston et al. 1994).

TABLE 5. *30-day prevalence of "being drunk" among 8th, 10th, and 12th graders by population density, 1993.*

	8th grade	10th grade	12 grade
Large MSAs	6.0	17.6	29.4
Other MSAs	8.4	18.2	26.9
Non-MSAs	8.1	24.7	32.0

SOURCE: Johnston et al. 1994.

Data from the NHSDA surveys reported in table 6 indicate that heavy drinking by rural youth ages 12 to 17 has declined in recent years, and in 1993 the proportion of youth who drank heavily differed little by community size. However, the rate of heavy drinking among rural residents between 18 and 25 years of age was nearly twice that of young adults in large metropolitan areas (14.3 percent versus 7.2 percent). Heavy drinking among young adults in rural areas declined somewhat in 1990 and 1991, but surveys in the 2 subsequent years indicated new increases in heavy alcohol consumption (SAMHSA 1994).

As drinking by those under age 21 became illegal in an increasing number of States, analysts of the NHSDA data compared rates of heavy drinking among respondents under age 21 and those ages 21 and older. As table 7 shows, in 1990 the rate of heavy drinking among nonmetropolitan residents under age 21 matched that of nonmetropolitan respondents age 21 and older. And in 1991, rates of heavy drinking among nonmetropolitan minors surpassed those of adults in all population strata. Comparing rates of heavy drinking among minors by community size shows that in both 1990 and 1991 youth under age 21 living in rural areas were less likely to use alcohol than their urban and suburban counterparts. However, among users, rural youth were more likely than those in large metropolitan areas to report heavy drinking.

TABLE 6. *Percent of persons ages 12 to 17 and 18 to 25 reporting heavy alcohol use in past 30 days by population density, 1985 and 1991-93.*

	1985	1991	1992	1993
Ages 12-17				
Large metro	3.5	1.2	1.5	1.1
Small metro	3.7	3.1	1.3	1.5
Nonmetro	4.0	3.1	1.1	1.6
Total	3.7	2.3	1.3	1.3
Ages 18-25				
Large metro	9.4	10.5	11.3	7.2
Small metro	9.1	12.1	9.1	12.4
Nonmetro	13.2	11.5	14.0	14.3
Total	10.1	11.3	11.3	10.4

SOURCE: SAMHSA 1994.

Rates of heavy drinking also were higher among rural than suburban youth in 1990, but the proportion of heavy drinkers was greater among suburban minors in 1991 (NIDA 1991; SAMHSA 1993*a*).

Age of Drinking Initiation

The Monitoring the Future surveys reveal a national trend toward younger initiation of drinking. In 1993, over one-third (36 percent) of high school seniors reported first alcohol use at grade eight or earlier (Johnston et al. 1994). This figure roughly corresponds to the 1990 NHSDA finding that among youth ages 12 to 17 years, the average age of first use of alcohol was 12.8 years (NIDA 1991). Unfortunately, neither of these surveys reports age of drinking initiation by community size.

A 1977 survey of Indiana students found that urban youth initiated beer and wine use at a younger age than rural adolescents (Hahn 1982). However, more recent studies indicate that in at least some rural areas, drinking is initiated earlier than the national average (Oetting and

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Beauvais 1990; Sarvela 1990). A survey of rural students in grades 7 through 12 in a small, mid-Atlantic town and surrounding county revealed that 57 percent had their first drink by age 12 (Gibbons et al. 1986*a*). Other data from this study led Laws (1991) to report that one-third of rural children have had their first drink on their own by age 10.

Early drinking initiation also can be inferred from local studies reporting a high prevalence of alcohol use among rural children and young adolescents. For example, a survey of 1,190 fourth, fifth, and sixth grade students in rural New Hampshire school districts found that half drank but not regularly, whereas 5 percent were regular drinkers and an additional 2 percent were regular drinkers who had been drunk at least

TABLE 7. *Percent of persons under age 21 and ages 21 and older reporting alcohol use and heavy alcohol use[1] in the past 30 days by population density, 1990 and 1991.*

	Under age 21		Age 21 and older	
	Any use	Heavy use	Any use	Heavy use
1990[2]				
Large MSAs	34.4	3.9	60.0	5.9
Small MSAs	36.3	4.6	54.1	4.0
Non-MSAs	29.5	5.2	42.0	5.1
Total	33.8	4.4	54.0	5.1
1991[3]				
Large MSAs	32.7	4.8	58.7	5.6
Small MSAs	34.3	7.4	54.5	5.0
Non-MSAs	30.7	5.9	42.2	4.7
Total	32.6	6.0	53.5	5.2

KEY: 1 = Defined as drinking 5 or more drinks per occasion on 5 or more days in the past 30 days; 2 = N = 2,938 under age 21 and 6,276 age 21 or older; 3 = N = 10,952 under age 21 and 21,117 age 21 or older.

SOURCES: NIDA 1991; SAMHSA 1993.

once (Stevens et al. 1991). Among Native American children living on reservations, about 10 percent of those in grades four through six have been drunk (Oetting et al. 1989), and this proportion increases to 28 percent in the seventh grade (Beauvais et al. 1989). Among rural middle school students in northern Michigan, the proportion who had been intoxicated increased from 21 percent in grade six to 60 percent by grade eight (Sarvela and McClendon 1987*b*). In interpreting these findings, it is important to remember that due to low body weight, children may be prone to intoxication from even small amounts of alcohol, and that the meaning of being drunk also may differ for children and adolescents (Hansen 1993).

Type of Alcohol Consumed

Comparatively few studies have examined the relative consumption of beer, wine, and liquor by rural youth, but nationally, beer is the most popular alcoholic beverage among young people (Grossman et al. 1994). Hahn (1982) found that beer was clearly the beverage of choice for alcohol-consuming students in both urban and rural areas of Indiana, and similar results have been obtained in California (Skager and Fisher 1989). A study of seventh graders in a rural southeastern county found that girls were slightly more likely to report any use of wine than beer; however, beer was the beverage most frequently consumed by both sexes (Farrell et al. 1992). Other research in Georgia and Maryland has found that the proportion of rural youth consuming beer and wine exceeds the proportion consuming whiskey or hard liquor (Alexander and Klassen 1988; Gleaton and Smith 1981).

Demographic Correlates of Drinking by Rural Youth

Although teenage alcohol use has been found to vary by age, gender, and ethnicity, neither the NHSDA nor the Monitoring the Future surveys report analyses of these variables by community size. However, results from several local and regional studies suggest that demographic characteristics associated with youthful alcohol use nationally also may characterize young people who drink in rural areas. Thus rural alcohol use prevalence appears to increase with age and school grade level (Bloch et al. 1991; Blum et al. 1992; Gibbons et al. 1986*a*; Kelleher et al. 1992; Napier et al. 1981; Oetting and Beauvais 1990; Sarvela and McClendon 1987*a*; Stevens et al. 1991). Most studies of rural youth indicate that males are more likely than females to drink and to drink heavily (Allen and Page 1994; Blum et al. 1992; Gibbons et al. 1986*a*;

Gleaton and Smith 1981; Kelleher et al. 1992; Napier et al. 1981; Sarvela and McClendon 1988; Stevens et al. 1991), but some research has found no differences in rural alcohol use prevalence by gender (Beauvais et al. 1989; Bloch et al. 1991; Farrell et al. 1992; Sarvela and McClendon 1987*a*, 1987*b*). Kelleher and colleagues (1992) found substantial differences in the drinking rates of girls by population density and rural region in Arkansas.

Alcohol use rates appear to be higher among Native American and white youth than among those other races (Allen and Page 1994; Bachman et al. 1991; Oetting and Beauvais 1990; OSAP 1990), but this pattern may vary in certain communities. Farrell and colleagues (1992) observed no differences in drinking prevalence between African-American and white youth in a rural county of the Southeast, and similarly, Kelleher and associates (1992) found no differences by race in the drinking rates of young adolescents in Arkansas. Blum and colleagues (1992) found a higher prevalence of daily or weekly alcohol use among white teens in rural Minnesota than among a broad geographic sample of Native American and Alaska Native youth. This pattern persisted throughout the teenage years until the 12th grade, when the rate of heavy drinking among Indian youth exceeded that among white Minnesota seniors.

Rates of all types of alcohol involvement among male Native American adolescents aggregated across tribal boundaries are typically higher than those of whites and other ethnic groups (Bachman et al. 1991; Beauvais et al. 1989; Blum et al. 1992; Moncher et al. 1990; Oetting and Beauvais 1990; Johnstone 1994; U.S. Senate Select Committee 1985; Welte and Barnes 1987). Among adolescent females who drink, the prevalence of heavy drinking also tends to be highest among Native American girls (Bachman et al. 1991; Beauvais et al. 1989; Welte and Barnes 1987). Nevertheless, Native American drinking practices are extremely heterogeneous (Beauvais and LaBoueff 1985; Beauvais et al. 1989; Christian et al. 1989; May 1989; NIAAA 1994*b*), and exceptions to these general observations should be expected.

Few studies have compared rates of drinking among minority youth by urbanicity; however, Gfroerer and De La Rosa (1993) found in a small but nationally representative sample of Hispanic youth that those living in a nonmetropolitan area were more frequent users of alcohol, cigarettes, and illicit drugs than their urban counterparts. Noting that this finding differs from other research on the drug use behavior of minority adolescents, these investigators called for additional research on the prevalence, patterns, causes, and consequences of drug use among the various Hispanic subgroups. Age and gender should be considered in such investigations, for youthful drinking rates by race may be influenced by interactions with these variables (Kelleher et al. 1992).

Consequences of Alcohol Use by Rural Youth

Numerous studies conclusively link teenage alcohol use to a host of health and social problems, including motor vehicle crashes and deaths, drowning, suicide, homicide, falls, fires, cigarette smoking, illicit drug use, early sexual activity, sexually transmitted diseases, rape, unwanted pregnancies, academic failure, school dropout, job difficulties, physical fights, property destruction, delinquency, and troubles with law enforcement authorities (Boyd et al. 1994; Clayton 1981; Jessor and Jessor 1977; NIDA 1987; Sixty-Sixth American Assembly 1984). In addition, the use of alcohol and other mind-altering substances has been shown to jeopardize physical, mental, and social development during the formative years and to endanger successful transition from school to the workplace (Hamburg and Takanishi 1989; Kandel 1982; Newcomb and Bentler 1988; Semlitz and Gold 1986; Steinberg 1991). Alcohol use and abuse initiated during adolescence also have numerous serious long-term consequences not only for users, but for family members, communities, and the Nation.

Systematic information on the distribution of these problems in sparsely populated areas is not available, but several studies indicate that alcohol use by rural youth is associated with negative consequences or increased risk of trouble. One exception is that Alexander and Klassen (1988) observed no relationship between school absenteeism and use of beer or wine, hard liquor, cigarettes, or marijuana by eighth graders in two rural counties on Maryland's eastern shore. However, these students were followed longitudinally, and reported drinking in the past month during grade 9 was one of several variables associated with medically attended injuries in grade 10. Adjusted odds ratios for ninth grade drinking on 3 or more days compared to 1 or 2 days in the past month indicated an incremental effect of alcohol use on injury occurrence (Alexander et al. 1992).

Similarly, Blum and colleagues (1992) found a linear increase in adverse correlates along a continuum of drinking among 13,377 Native American and Alaska Native youth living on or near rural reservations. Youth characterized as potential problem drinkers were most likely to have sustained an alcohol- or drug-related injury, experienced school problems, had family problems associated with substance use, or ever have attempted suicide. This study also revealed that among Indian and Native youth who drink, 40 percent have driven after drinking. Over one in five of all youth surveyed said they often or sometimes ride with a driver who has been drinking or using drugs. No data were found that directly link alcohol use by Native American youth to motor vehicle traffic fatalities, but Mahoney (1991) has reported frequencies showing that most such deaths among Native Americans in New York State involve teenagers and young adults, rural areas, and alcohol consumption.

Several other studies have explored relationships between teenage drinking and driving. Kidd and Holton (1993) reported an association between alcohol use and risky driving practices of rural adolescents. Heavner and colleagues (1991) found that although high school seniors in small towns in rural West Virginia recognized that auto accidents would threaten their life and health in the immediate future, they still indulged in high-risk drinking and driving behavior. Sarvela and associates (1988*a*) reported more specific data on drinking and driving practices among junior and senior high school students in a small Ohio town. Approximately 19 percent of these students had driven under the influence of alcohol, 35 percent had ridden in a car with an intoxicated school-age driver, 35 percent had refused a ride from a friend who was intoxicated, and 43 percent had tried to stop a drunk friend from driving. No gender differences were found regarding drinking and driving, but males drank in greater quantity than females. Both drunk driving and riding with a drunk driver increased substantially between grades eight and nine.

Comparable results were obtained from similar research in rural Illinois; however, in this latter study females were somewhat more likely than males to report riding in a car with a drinking driver, while males were somewhat more likely to report driving under the influence. Frequency of drinking within the past 6 months strongly predicted both dependent variables. Grade point average was unrelated to these behaviors, thus challenging the assumption underlying lower auto insurance rates for youthful drivers who are good students (Sarvela et al. 1990).

Thombs and colleagues (1994) also have reported that about 20 percent of high school students age 16 and older in rural New York drove while intoxicated at least once during the past 12 months, and 34 percent of students in grades 7 through 12 rode with an intoxicated driver during this time period. Although differences in methods of reporting data preclude precise comparisons, the consistency of these rates with those from Ohio and Illinois is striking.

Examining immediate consequences of alcohol use among rural middle school students in upstate Michigan, Sarvela and McClendon (1987*b*) found that 23 percent had been sick from drinking and 20 percent felt guilty after alcohol use. Expressions of guilt after drinking increased with age and were significantly higher among females than males. Holcomb and associates (1990) also have reported that between 4 and 14 percent of junior and senior high school students in rural central and southern Illinois had experienced negative consequences of their alcohol or other drug use. Harmed friendships, fighting, trouble with family, and self-dissatisfaction were most frequently reported. Males and females reported negative consequences due to substance use at similar rates for six of the nine problems considered, but males were more likely than females to report fighting, trouble with the law, and trouble with school authorities. Unfortunately, this report does not differentiate types of consequences experienced by type of substance used.

ETIOLOGY OF DRINKING BY RURAL YOUTH

Epidemiologic data on patterns and consequences of alcohol use by rural youth provide the scientific rationale for targeting prevention programs to young people at greatest risk, but designing effective interventions also depends on understanding the etiology of youthful drinking behavior. Modifiable links in the causal chain of events leading to youthful alcohol use and negative consequences of drinking can then be identified and targeted for change.

The limited information available about differences in youthful alcohol use by population density has not been a central consideration either in searching for predictors of drinking behavior or in developing etiologic models of youthful alcohol use. An important issue, therefore, is whether predictors identified to date, etiologic models based upon them, and related prevention programs are generalizable to youth in rural areas.

Key Predictors of Alcohol Use by Rural Youth

Many potential predictors of teenage alcohol use have been studied, but with mixed results. In a succinct review, Dryfoos (1990) identified five sets of variables that most researchers agree are risk markers for later substance abuse:

> . . . early initiation [of any substance use] and susceptibility to peer influence are significant markers. Family influences are also important: lack of parental support, involvement, and caring and parental approval of drug and alcohol use are strong markers of risk. Certain personality patterns are significant: nonconformity, rebelliousness and independence (from parental authority, but not necessarily from peer influences). School problems emerge early, including misconduct, truancy, and low achievement, which gets translated in later years into being "turned off" by school and having low aspirations for further education (p. 57).

Although little research has examined whether these antecedents predict alcohol use by rural as well as urban youth, results from available studies are generally consistent with this summary.

Age of First Alcohol Use. Donnermeyer (1993) found that age of first alcohol use predicted current alcohol use among 197 rural and small-town 7th and 11th graders from north central Illinois. Age of first alcohol use also was related to first use of marijuana, which in turn was related to first use of hard drugs. These cross-sectional results are complemented by Winfree's (1985) longitudinal finding that alcohol use in grade seven predicted alcohol use 3 years later by youth in a rural Rocky Mountain town.

Peer Influence. A number of studies have found strong correlations between alcohol use by rural youth and peer drinking (Beauvais et al. 1989; Kelleher et al. 1992; Lassey and Carlson 1980; Napier et al. 1984; Oetting and Beauvais 1987; Oetting et al. 1988, 1989; Sarvela and McClendon 1983, 1988), even in elementary school (Stevens et al. 1991). On the other hand, in a survey of over 1,200 rural high school students in western New York State, Thombs and associates (1994) found that peer acceptance was associated with only one alcohol-related variable: whether or not teenagers ride with drunk drivers.

Oetting and colleagues (1989) observed stronger correlations between peer associations and alcohol use among rural Anglo youth (0.58) than among Native American students (0.28). These investigators speculated that Anglo youth may use alcohol mostly with peers, but due to limited availability of alcohol on reservations and transportation difficulties, Indian youth may drink fairly often in situations where they are not with peers who have the same level of alcohol involvement.

Gleaton and Smith (1981) demonstrated that perceived drinking by best friends exceeds actual use rates among high school students in both urban and rural settings. Lassey and Carlson (1980) found that talking about problems with best friends was associated with adolescent drinking in rural Idaho. However, in a longitudinal study of youth from a town in the Rocky Mountain region, Winfree (1985) discovered changes over time in the extent to which an adolescent's views about drugs conflict or mesh with those of peers and the frequency of peer-based discussions about drugs, either pro or con, changes over time. Regardless of the nature of these changes, they were unrelated to alcohol use as youth grew older.

Napier and colleagues (1984) surveyed high school students in rural Georgia to test the proposition that the types of individuals with whom youth associated and the role models they chose for emulation would be related to their drug use behavior. Recognizing that the behavior of adolescents can be affected by real or imagined role models, these investigators found that those youths who identified with nonconformist groups (those who listened to rock music, were interested in 4-wheel-drive vehicles, and potheads) were more likely to use illegal drugs, including alcohol, than were students who identified with socially conforming school, religious, and soul music groups. Dating frequency, use of drugs by friends, and the wish to be accepted by friends also were positively correlated with the use of drugs, as were drug use at home, at social events, in cars, and in friends' homes. On the other hand, drug use was negatively associated with church attendance and number of school activities.

Parental Influence. Several aspects of possible parental influence on alcohol use by rural youth have been investigated. Fournet and colleagues (1990) found that from 9 to 27 percent of students in grades 5 through 12 in four rural school districts viewed their parents as approving of their drinking. Students in all grades also were aware of friends who had problems because of parental drinking. Perceived family attitudes toward drinking were strongly related to the use of alcohol by elementary school children studied in rural New Hampshire (Stevens et al. 1991) and by seventh graders in rural North Carolina (Dignan et al. 1986).

Parental drinking also has been highly associated with alcohol use by rural youth (Chambers et al. 1982). Kelleher and associates (1992) discovered that both parental drinking and parental approval of adolescent drinking were associated with alcohol use by sixth, seventh, and eighth grade Arkansas students, but the strength of correlations varied in two rural areas, as well as in urban and suburban cities. Youth from the Arkansas delta reported more family-influenced alcohol consumption than those from the Ozark highlands, who revealed a peer-influenced pattern of drinking. These effects were particularly marked among girls.

Lassey and Carlson (1980) found that drinking behavior of fathers and, to a lesser extent, of mothers was strongly associated with the drinking patterns of 8th and 12th graders in rural Idaho. Another survey of 3,179 ninth grade students in a rural midwestern State revealed that adolescents who reported alcohol or drug use by family members were more likely than other youngsters to report personal use of alcohol, cigarettes, marijuana, or speed. Additionally, these youngsters were more likely to report sexual abuse and to say that they used substances because of family problems, and because they were sad, lonely, or angry (Hernandez 1992). However, a survey of high school students in a rural midwestern community found alcohol use was common among all adolescents, while a history of physical and sexual abuse was associated with other problem behaviors (Hibbard et al. 1990).

Blum and associates (1992) demonstrated powerful effects of parental drinking and driving practices on related behaviors of Native American and Alaskan Native youth living on reservations. Among teenagers of driving age, nearly half of those who had seen their parents consume three or more drinks before driving reported having done the same. However, among the 73 percent of youth who had not seen their parents drink and drive, almost 70 percent said they would never mix alcohol and driving.

Surveying a cohort of students from a rural Rocky Mountain community in middle school and then 3 years later, Winfree (1985) found that the majority did not discuss drugs with their parents at either time point.

Nonetheless, the proportion of youth having such discussions increased with time, and the tenor of these discussions was typically negative.

Donnermeyer (1993) found intact family structure unrelated to alcohol use by 11th graders studied in rural Illinois. However, in a survey of junior and senior high school students in rural Ohio, youth from broken homes reported a higher incidence of parental drinking problems than did students living with both parents, and these perceptions appeared related to youthful drinking behavior (Newcomb and Sarvela 1988). Another study of 9th and 12th grade students in rural Ohio found that stability of home life as measured by parents' marital status and quality of relationship was correlated with frequency of both alcohol and marijuana use (Napier et al. 1981). Whether or not seventh grade students were living with both natural parents and perceived quality of the parent-child relationship also predicted alcohol use in grade nine in a rural eastern community (Bloch et al. 1991). Similarly, Lassey and Carlson (1980) found that closeness of relationship with father and mother and a high level of problem-related communication with parents were associated with a lower probability of teenage drinking in rural Idaho.

These findings are generally consistent with the proposition that parental alcohol consumption and family management practices are more important determinants of youthful alcohol use than family structure (Dryfoos 1990; Peterson et al. 1994). However, some results from rural research remain difficult to explain. For example, Gibbons and colleagues (1986*a*) found that mother's occupation was related to frequency and amount of drinking by adolescents in a rural county of a mid-Atlantic State. These investigators speculated that youth whose mothers work in higher level occupations might have more money to spend on alcohol, or that sons and daughters of working mothers might have less supervision than children of full-time homemakers.

Personality Traits. Few studies have investigated relationships between personality traits of rural youth and their drinking behavior, but Oetting and associates (1989) have reported that only a small amount of their alcohol involvement can be attributed to psychopathology. Workman and Beer (1992*a*, 1992*b*) found an association between aggression and alcohol use among students from a small high school in rural Kansas. Another study in this locale found sensation-seeking unrelated to alcohol use among high school honor students (Baker et al. 1991). Sensation seeking contributed only marginally in discriminating intensity of drinking by rural adolescents in New York State, but this variable was moderately important in distinguishing rural youth who drove under the influence and rode with intoxicated drivers (Thombs et al. 1994).

In a path analysis of data from rural youth, Swaim and colleagues (1989) found that five emotional distress characteristics (anxiety, depression, self-esteem, blame/alienation, and anger) were linked to number of friends using drugs and number of drug offers from friends, but only anger was directly related to drug use. In another study, this group of investigators compared emotional distress and alcohol use among rural Indian and Anglo high school juniors and seniors. Anger and anxiety were modestly correlated with alcohol use by Anglos, and peer associations mediated this relationship. Among Indian teenagers, anger, depression, blame/alienation, and anxiety were negatively correlated with alcohol use. After the mediating effects of alcohol-using peers were controlled, Indian students with higher anger used *less* alcohol (Swaim et al. 1989).

School Problems. A longitudinal study of 625 children from six schools in small Montana towns found that negative school attitudes and negative self-concept in grades three and four predicted alcohol use in grades six and seven (Long and Boik 1993). Another longitudinal study of youth in a single rural school district in the eastern United States found marks in school and academic activities in grade seven predicted whether in grade nine students never got drunk, got drunk once a year or less, or got drunk monthly or more often (Bloch et al. 1991). Among Native American adolescents from rural reservations, those who reported below-average school performance were more than twice as likely as those doing above average in school work to drink alcohol weekly (Blum et al. 1992). However, a study of 10th and 12th grade students in rural Pennsylvania had surprising results: Students who were heavy users of alcohol scored higher on career decisionmaking readiness than students who used alcohol less frequently (Pendorf 1991).

Etiological Models of Alcohol Use. Within the relatively small cadre of investigators studying alcohol use by rural youth, some have examined multivariate relationships and a few have done so within a theoretical framework of youthful drinking etiology. Napier and colleagues (1984), for example, were guided by differential association and differential identification models of deviancy. These concepts were integrated into the larger theory of social control and deviance that informed Winfree's (1985) investigation. Both perspectives incorporate attention to theories of adolescent development, particularly as they affect changes in peer and parent relationships.

Focusing explicitly on developmental theories of teenage drug use, Donnermeyer and Huang (1991) demonstrated that the time rural youth spend with friends and with family interact with age to influence consumption of alcohol and other substances. These authors suggested as a hypothesis for further research that the interaction of age and family influence on youthful drinking would be stronger in a rural or farming community than in a lower-class urban neighborhood.

Oetting and Beauvais (1987) developed peer cluster theory to explain how various factors interact to influence drug use behavior. This theory proposes that tightly knit and cohesive subsets of the peer group provide the specific link between five domains of variables that either set the stage for substance use or protect youth against it. Although analyses of cross-sectional data collected from rural youth have supported this theory (Beauvais et al. 1989; Oetting and Beauvais 1987; Oetting et al. 1988, 1989; Swaim et al. 1989). Hayes and Revetto (1990) reanalyzed some of these data to point out that alternative models should be considered. In one such model, both family sanctions and school adjustment were directly related to adolescent drug use. In another, drug use was an intermediate variable that, with family sanctions and religious identification, predicted school adjustment. As Dryfoos (1990) has observed, untangling cause-effect relationships in predicting behavior is in itself a high-risk activity.

Two etiologic models in particular have been applied in the development of alcohol and drug prevention programs. The social influences or social normative model is behavior specific and holds that youthful alcohol use is affected by parental modeling, peer pressure and drinking practices, and the media. As the preceding review reveals, these relationships are very complex and not well understood. Nonetheless, prevention programs based on this model attempt to make youth aware of social influences on their substance use behavior, to correct perceptions about the prevalence of peer drinking, and to develop skills for resisting peer pressure or coping with a broader array of life problems (Bangert-Drowns 1988; Botvin et al. 1984; Botvin and Wills 1985; Dielman 1994; Hansen 1992).

The other dominant prevention model holds that common risk factors underlie youthful alcohol use and other problem behaviors. Problem behaviors are thought to increase with the number of risk factors youth experience (Bry et al. 1982; Hawkins et al. 1986; Jessor and Jessor 1977; Newcomb et al. 1986). Interventions that reduce these risk factors or enhance protective factors therefore are presumed to prevent not only alcohol use but also other behaviors that jeopardize health and well-being.

In a survey of rural, suburban, and urban school districts conducted by the National Rural and Small Schools Consortium and the American Council on Rural Special Education, school administrators were asked to estimate the prevalence of numerous risk factors among students at all grade levels. Respondents estimated that 17 percent of rural students compared to 10 percent of urban ones were substance users. Overall, rural children fared worse than nonrural in 34 of 39 statistical comparisons. These results support the view that rural youth are characterized by many dimensions of risk (Helge 1990), but the relationship of these risks to alcohol use has not yet been established.

Several studies have demonstrated that teenage drinking is related to other forms of substance use in rural areas (Donnermeyer 1993; Farrell et al. 1992; Moncher et al. 1990; Stevens et al. 1991). Some research also has shown that common risk factors predict alcohol and other drug use by rural youth. Silverman (1991) readily distinguished high-risk and low-risk youth in a survey of 1,175 students in 7th to 12th grades in a rural school system. Most students (83 percent) were either abstainers or experimental users of substances, including alcohol. However, 17 percent were multiproblem teens with a clearly identified lifestyle:

> They were non-conformists who preferred heavy metal rock, indulged in multiple substance use, frequent sexual activity, and received poor grades. Quality of parental involvement was both a correlate of and a solution to drug abuse (p. 107).

Farrell and colleagues (1992) found that all but 1 of 15 risk factors identified in an earlier study of urban youth were related to at least one category of drug use among rural seventh graders in a southeastern State. An index based on a subset of 10 risk factors was significantly associated with the prevalence and frequency of cigarette, beer and wine, hard liquor, marijuana, and other drug consumption, but only 6 percent of the students had 7 or more risk factors. Another study in a rural school district in the eastern United States found that six risk factors measured in the seventh grade predicted the frequency of getting drunk 2 years later. This risk factor index also predicted frequency of alcohol use in an eighth grade replication sample. No age or gender differences in these predictors were observed (Bloch et al. 1991). Moncher and colleagues (1990) found that a 16-item risk factor index was highly correlated with lifetime use of alcohol and other substances by fourth and fifth grade Native American youth from reservation sites and tribal communities throughout the Pacific Northwest.

These data suggest that the risk factor model has potential for predicting alcohol and other drug use by rural youth, but it holds less promise for understanding the etiology of youthful drinking behavior and therefore for guiding prevention programs. Each of the cited studies assessed different risk factors with little overlap, except that items were generally related to the families of variables already identified as major predictors of youthful substance use. Each index also was based on a different number of items. Index construction assumed each risk factor had equal weight and that the relationship between variables was additive. Consequently, results provide little new insight into factors affecting alcohol use by rural youth with one notable exception.

Some risk factors initially included in two of the indices described above were removed because they were not correlated with drug use by rural adolescents. Farrell and associates (1992) eliminated "high emotional distress" from an index previously used with urban adolescents, but "low emotional restraint" was retained. Bloch and colleagues (1991) removed "self esteem" and "emotional tone" from their risk factor index. Both sets of authors commented that the variables omitted may reflect urban/rural differences in risk factors for substance use. For instance, Bloch and colleagues suggested that alcohol use may not be viewed as deviant among rural adolescents, or alternatively, that self-image does not predict alcohol consumption in this population.

Findings from risk factor research with rural youth have not led to agreement on implications for prevention. Bloch and colleagues (1991) concluded that prevention programs need to be broad based and multifaceted in order to deal with the diversity of risk factors. Observing that different factors interact with different ages to predict teenage use of alcohol, marijuana, and hard drugs, Donnermeyer and Huang (1991) recommended customizing prevention programs for each type of substance to specific age groups. Farrell and colleagues (1992) suggested that their risk factor index might be used at the individual level to identify high-risk youth for more intensive interventions or to identify schools that contain higher percentages of high-risk youth. At the same time, these authors cautioned that not all youth with a high risk factor index are involved in substance use, that some risk factors may be consequences rather than causes of use, and that the results of their study may not be generalizable to other rural areas.

Moncher and associates (1990) have expressed ethical concerns about the effects of using assessment tools that label some youth high risk, noting that this is especially important among Native American youth, many of whom must deal with issues of cultural scapegoating at an early age. Studies reporting the distribution of scores on risk factor indices have found only small percentages of adolescents with high scores, and as Silverman's (1991) study suggests, these youth already may be set apart in a distinct adolescent subgroup. Other issues concern the sensitivity of risk-factor indices and implications of false positive and false negative identifications of youth at risk.

Both of the dominant etiological models of youthful substance use have been criticized for emphasizing the importance of individual, family, and peer antecedents with commensurate neglect of community and other environmental factors (e.g., Wallack and Corbett 1987). However, social norms and the mass media are recognized as important in the social influences model, and, as currently conceptualized, the risk factors model includes attention to school and community (CSAP 1993*b*). Still, neither model may be adequate. Efforts to integrate current knowledge from various disciplines concerning the development of risk for alcohol-related problems in youth indicate that the etiology of adolescent drinking is much more complex than previously supposed. Cultural, social, environmental, and other macrolevel influences, as well as psychological factors and biologically mediated processes, are implicated in the development of alcohol abuse and alcoholism (Boyd et al. 1994).

Efforts to develop an integrated theory of drinking behavior reflect this complexity (Wagenaar and Perry 1994), but research on alcohol use by rural youth generally has not. An important exception is the Iowa Youth and Families Project that, through longitudinal research, has developed and rigorously tested a theoretical model relating rural economic hardship to parental emotional distress, hostile spousal and parent-child relationships, unhealthy influences on adolescent development, and adolescent antisocial behavior (Conger et al. 1994; Conger and Elder 1994; Skinner et al. 1992). As part of this work, Conger and colleagues (1991) have shown that marital conflict resulting from economic hardship is directly related to alcohol use by rural seventh graders.

Results also suggest that economic pressure leading to hostile and irritable parental interactions with children indirectly contributes to youthful alcohol use by fostering children's association with antisocial friends who play a direct role in drinking experimentation.

Other investigators have proposed that theories of culture, acculturation, and stress are relevant to understanding alcohol use by youth (LaFromboise 1988; Moncher et al. 1990; Schinke et al. 1988*a*). Some research also has investigated aspects of the rural environment that may influence teenage drinking. These considerations direct attention to the ecology of drinking by youth in rural areas.

ECOLOGY OF ALCOHOL USE BY RURAL YOUTH

As Steinberg (1991) has pointed out, prevention programs need to take into account adolescents' place in the society in which they live and not focus solely—as most now do—on the development of individual cognitive or social skills. Thus knowledge is needed about the roles of adolescents in rural America, as well as about the ways that alcohol use in rural environments is associated with transitions from childhood into adolescence and then from adolescence into adulthood. Gaining such insight, in turn, requires a better understanding of how alcohol use fits into rural culture. Although little is known about these topics, some elements can be identified that are relevant to developing an ecological perspective on drinking by rural youth.

Sources of Information About Alcohol and Other Drugs

Messages in the environment socially construct the meaning of alcohol use and its consequences. According to Gitlin (1990, p. 32), "[T]he meaning of a given drug to the people who use it, even the experience of the drug itself, differs considerably from one society, one sector, one group, even one moment in time to another." Knowing what rural children and youth learn about alcohol from their surroundings is important.

Two surveys of rural school children suggest that sources of alcohol and drug information vary in different communities and that the amount and possibly the type of information received also may vary by age and gender. Among 8th and 10th grade students in small to medium-sized central Texas school districts, males reported receiving more information about each of six drug categories than females; 8th graders received more information than 10th graders. Television was the primary source of information for all drugs except inhalants. Parents and print media were of secondary importance, followed by friends and teachers. These students were less likely to receive drug-related information from experience, siblings, church, doctors, and police (Mirzaee et al. 1991). Junior and senior high school students in rural northwest Ohio most frequently identified the media and teachers at school as sources of drug and alcohol information (18.8 percent each); next were friends (11.2 percent), personal experiences (7 percent), and parents (6.9 percent). Only 3 percent named siblings or alcohol and drug agency personnel as their primary information sources, but 23 percent cited "other" as a potential source of information. No major differences were found between the information sources cited by males and females. However, nearly 18 percent of those responding said that they did not know much about drugs and alcohol (Sarvela et al. 1988*b*).

The importance of mass media in informing rural youth about alcohol use indicates that influences on their drinking behavior are by no means restricted to the rural environment. Rather, information about drinking norms and values is obtained not only from family, friends, and neighbors in physically proximate "horizontal" communities but also from television and other forms of mass communication originating in distant "vertical" communities (Gardner and McColgan 1990). Although these media may convey some public service prevention messages, through commercials and regular programming they also portray alcohol use as a normal and desirable part of American living (Atkin et al. 1984; Breed and De Foe 1981; De Foe et al. 1983; Gerbner 1990; Greenberg 1984; Greenberg et al. 1984; Wallack et al. 1990). Additionally, the media are a ready source of the nonconformist role models referred to by Napier and associates (1984). Further, Gitlin (1990) has argued that both the mass media and substance use embody the same values in American culture:

> In the context of a society that so deeply values material acquisition, television cultivates a thirst for goods. And yet, since means are limited and pleasures evanescent, television also helps generate appetites that cannot be fulfilled. American culture therefore opens up a gap between media-nourished expectations of gratification and experience that fails to meet them. One attempt to bridge that gap is drug use (p. 46).

In reporting sources of information about alcohol and drug use, young people may fail to acknowledge the pervasive messages that Gitlin described or the information they receive about drinking through observations of everyday life in rural areas. Nevertheless, the availability of alcohol in the community, its packaging and pricing (Wallack and Corbett 1987), the prevalence of alcohol use in various subgroups, the functions served by this behavior, and actual consequences of drinking, both positive and negative, are more constant and compelling sources of information than structured prevention messages. This is so because youth alcohol use is social behavior learned from and regulated by the social environment (Akers 1992; Perry 1986; Smith and Goldman 1994; Wagenaar and Perry 1994).

For this reason, officials of rural school districts have expressed concern that parents and the community undermine the effectiveness of drug education programs. In one case, district officials thought that serving champagne to parents who were planning a drug-free party for graduating seniors sent a mixed message to students, but parents disagreed (GAO 1992*b*).

The Why, Where, When, and How of Drinking by Rural Youth

Although scanty, information about motivational and situational factors associated with drinking by rural youth suggests that messages about alcohol use in some rural communities are far more pervasive and powerful than those transmitted by parents sipping champagne.

Youth Motivation and Drinking. Few studies have investigated the rationales adolescents in rural areas use to explain either the initiation or the continuation of their drinking, but Binion and colleagues (1988) compared Indian and non-Indian eighth grade students on the importance they attributed to 13 possible reasons for using alcohol. Pleasant sensations, being with friends, and excitement were important to both groups, but Indian youth appeared to attach more importance to reasons related to alleviating boredom than did non-Indians. On the other hand, more non-Indian than Indian students saw alcohol use as important for parties.

Recognizing that, in light of the acquired immunodeficiency syndrome (AIDS) epidemic, drinking large amounts of alcohol and engaging in sex after one's judgment is impaired can be a lethal high-risk behavior, Conner and Conner (1992) explored the expected benefits of alcohol use on sexual behavior among 42 Native American teenagers attending a week-long intertribal powwow. Their survey was conducted as part of a prevention project designed to reduce adolescent use of alcohol and other drugs at the powwow, but 40 percent of the respondents reported drinking during the week. Drinking was not related to the expectation that alcohol reduces anxiety in interacting with the opposite sex, but heavy drinking was associated with the belief that alcohol makes sexual experience more enjoyable. The authors concluded that more than safe sex education is needed to protect these adolescents.

Self-medication and emotional regulation have been identified as motives for alcohol use by urban adolescents, and their drinking also has been linked to minority group status, stressful life events, loss of control, and loss of life meaning (Newcomb and Harlow 1986; Schinke et al. 1988*a*). In rural areas, Native American youth are particularly subject to stress from poverty, prejudice, and lack of economic, educational, and social opportunity (Beauvais et al. 1989; Oetting et al. 1989; OSAP 1990). Blum and colleagues (1992) related these conditions to a sense of hopelessness observed among even the most successful Native American and Alaska Native youth from rural reservations and communities. Nevertheless, as previously discussed, Swaim and associates (1989) found that anger was the only dimension of emotional distress linked to alcohol involvement of rural Indian high school students, and that correlation was negative. Because anger also was positively related to self-esteem, the authors commented that Indian youth have a great deal to be angry about and those with positive self-esteem may be most able to express this anger. This same dynamic may explain why anger was inversely related to associations with alcohol-using peers and drinking. Based on this and other work, Oetting and coworkers (1989) rejected the hypothesis that much alcohol use occurs because youth are self-medicating for depression, anxiety, or inadequate self-esteem, even when acculturation stress might be influencing these characteristics.

Napier and colleagues (1981) found life crises modestly correlated with alcohol use among high school students in rural Ohio. Workman and Beer (1992*b*) reported that rural Kansas high school students from divorced and alcoholic homes had higher depression scores than students from nondivorced and nonalcoholic homes, and in this small sample, depression was correlated with alcohol dependency. Reasons given by rural Nebraska high school students for alcohol and drug involvement included depression and hopelessness, as well as inability to control oneself, life demands, family finances, and pressure (Cohen 1987).

Social Contexts for Drinking. Drawing upon Social Learning Theory (Bandura 1977, 1986), Thombs and colleagues (1994) developed a social context concept to explain how intrapersonal variables such as beliefs, expectancies, and moods interact reciprocally with situational variables such as time of day, location, and contact with peers to shape teenage alcohol use. According to these investigators:

> Distinct social contexts may be identified by the way in which certain internal motivations tend to combine with complimentary social situations. For example, on weekend nights, teenagers are more apt to drink alcohol to have fun and excitement, whereas drinking on a weekday, after school and work, would more likely be linked to stress relief (p. 73).

In a study of 1,228 students in 7th through 12th grades from rural New York, Thombs and colleagues (1994) examined the ability of five social context scales to discriminate the intensity of youthful drinking, driving under the influence, and riding with intoxicated drivers. High-intensity drinkers were separated from low-intensity ones by frequent drinking to enhance fun at social gatherings, as well to reduce negative feelings. High-intensity drinkers were separated from moderate-intensity ones on the basis of drinking on school grounds to defy school and adult authority. The school defiance and stress control measures most clearly separated drinking from nondrinking drivers, but drinking to have fun and to defy parental authority also made a contribution. Drinking to have fun and to control stress best separated youth who did and did not ride with an intoxicated driver, while peer acceptance, parental control, and school defiance made additional contributions.

Thombs and colleagues (1994) concluded that teenagers prone to abuse alcohol not only display different patterns of alcohol intake but they also differ with regard to where, when, and why they drink. Adolescents who drink frequently to enhance sociability and have a good time at parties, to medicate against negative self-thought and mood, and to rebel against authority comprise a high-risk group inclined to drink to excess, experience a significant number of alcohol-related problems, and drive while impaired by alcohol.

Use of Time and Drinking. Officials from many rural school districts advised the GAO (1992*b*) that virtually all student drug use occurs after school hours or on weekends. Several officials said that rural youth use drugs because they have nothing else to do.

A survey of rural junior and senior high school students in a mid-Atlantic State revealed that time spent socializing was related to time spent driving around in a car and to the amount of alcohol consumed on several occasions—when others are drinking and adults are not present, before going to a party or on a date, on special occasions, and when no one else is around. Time spent working and playing video games also was positively related to several of these drinking situations, as well as to the amount of alcohol consumed at dinner or at home with the family. Time spent studying was negatively associated with all occasions for drinking except those involving the home and family. Time spent in extracurricular activities and frequency of attendance at religious services also were negatively correlated with alcohol consumption in several situations (Gibbons et al. 1986*b*).

Where Rural Youth Obtain Alcohol. As Beauvais and colleagues (1989) have observed, if lifetime use prevalence is high, a drug is clearly available and accessible. However, just four of the studies reviewed provided information on where rural youth obtain alcohol. Among rural New Hampshire elementary school children who reported drinking and who also provided information about their source of alcohol, 88 percent said they procured it from their families or took it from home without permission. These children were most likely to drink at home, although not necessarily with other family members (Stevens et al. 1991). Kelleher and associates (1992) found that young adolescents living in the Arkansas delta had less access to alcohol than same-age students living in a city, a suburb, or the Ozark highlands. Delta boys reported more sneaking or buying of alcohol themselves, and they also reported less frequent drinking than boys from other areas.

Two focus groups held with college undergraduates recruited from rural communities in the upper Midwest yielded rich information about the processes through which rural youth obtain alcohol (Wagenaar et al. 1993). Focus group members said that for initial drinking, older siblings and friends were their most frequent source of alcohol, typically at parties. Occasionally they obtained alcohol from parents' supplies in the home, with or without permission. Some parents supplied alcohol to their underage children in exchange for agreements to consume the alcohol at home instead of at parties or in bars and taverns. This was most likely to occur on special occasions, such as graduation parties.

Parties were the major source of alcohol during the high school years. These events were frequently held outdoors in such rural environs as gravel pits, vacant fields, and woods. Older adolescents and young adults usually obtained the alcohol for these parties, where they welcomed younger teens and "broke them in" by encouraging them to become very intoxicated. In some communities, adolescent entrepreneurs would purchase kegs of beer and publicize the time and location of a party, splitting profits from a nominal fee per glass or a single price of admission. Younger attendees were charged more than older attendees because they were willing to pay more. Focus group participants also reported frequent drinking on road trips, described as "when you get a couple cases of beer, get a bunch of guys and girls in a car and drive around and drink" (Wagenaar et al. 1993, p. 461). Informants additionally provided detailed information on strategies underage youth used to purchase alcohol from commercial outlets. If clerks were not known personally, alcohol was typically purchased outside the community of residence.

In pilot studies of new instruments and data-collection procedures, Wagenaar and colleagues (1993) have confirmed the role of noncommercial sources in supplying alcohol to rural youth. In a sample of 560 eighth graders, 88 percent of males and 83 percent of females reported it was easy or moderately easy to sneak alcohol from their home, while 92 percent of males and 93 percent of females reported that it was easy to get at parties. Another study from rural Minnesota found that alcohol was also easy to obtain commercially: Girls appearing younger than 21 years were successful in 47 percent of 336 attempts to purchase alcohol without age identification (Perry et al. 1993).

Concerns of Rural Youth. Only one study was found that examined the perspectives of rural youth on their own problems and resources. Recognizing that such information is needed to plan youth services, some years ago House and associates (1979) surveyed junior and senior high school students in a poor, rural county of North Carolina. Students most frequently expressed personal concerns about use of free time, appearance, relationships with parents, and emotional stress. Drinking too much alcohol was a personal concern for fewer than 3 percent of these students, and while nearly 20 percent attributed concern about substance use to their classmates, smoking was thought to be a more frequent worry than alcohol or other drug use. Although approximately 50 percent of the adolescents in the county were excluded from this survey because they left school before completing the 10th grade, those who did participate expressed relatively less concern about academic problems, drugs, and sex than urban adolescents.

Macro Characteristics of the Rural Environment

With the exception of the paper by Conger and colleagues (1991), no research was discovered that relates macro characteristics of rural America to alcohol use by rural youth. To rough out a more complete ecological perspective, this section identifies some of these larger forces and considers ways that they may be associated with drinking by rural adolescents.

Rural Poverty. Alcohol use and other adolescent problem behaviors are disproportionately concentrated among economically disadvantaged and minority youth in both urban and rural areas (Steinberg 1991). Very few studies of rural youth have examined the relationship of socioeconomic status to drinking, but Gibbons and associates (1986*a*) found that 50 percent of rural students from families receiving public assistance had their first drink by age 10, whereas only 30 percent of children from nonassistance families were this young when they initiated drinking. By age 13, almost all youth (96 percent) from families receiving assistance had initiated drinking, compared to 67 percent of adolescents from nonassistance families.

Rural families are more likely to live in poverty than urban ones. In 1987, the average family income in rural areas was only about 75 percent of the average urban family income and more than one out of every six rural families lived in poverty, as compared to one out of eight urban families (Weisfeld 1993). Child poverty rates in nonmetropolitan areas also exceed those in metropolitan ones. The growth of female-headed families in rural areas accounted for roughly 60 percent of the rise in child poverty during the 1980s (Lichter and Eggebeen 1992).

Much rural poverty is in areas with chronically depressed local economies where per capita incomes have remained in the bottom fifth of all U.S. counties for several decades (Braden and Beauregard 1994). Since 1979 the unemployment rate has been higher in rural than urban areas. This is related not only to vast farm foreclosures, but also to the cyclic boom-and-bust economies of the agriculture, timber, mining, and energy industries and to increasing dependence of rural communities on manufacturing and other sources of income (Human and Wasem 1991). In 1920, three-fifths of the rural population were farmworkers (Reynolds et al. 1976); at present, the rural nonfarm population outnumbers the rural farm population by approximately seven to one. In 1991, only 13 percent of rural residents lived in farming-dependent counties (Human and Wasem 1991).

The effects of continuing economic strain on alcohol use by rural youth are poorly understood, although the work of Conger and colleagues (1994) points to the importance of the family in this dynamic. Based on extensive interviews with school administrators, teachers, and students in rural Iowa, Elliott (1988) has reported that rural students at educational risk are deeply affected by the isolation and the economic decline present in most rural communities. In 1990, school dropout rates among 16- to 24-year-olds were 13.6 in nonmetropolitan areas compared to 17.0 in central cities and 10.7 in suburbs, but poverty appears to have larger effects on dropout behavior in nonmetropolitan than suburban areas. Family structure also seems to have a strong influence on the educational achievement of rural youth (Lichter et al. 1993). The median educational levels of young adults in nonmetropolitan areas declined during the last decade (McGranahan and Ghelfi 1991); however, in part this reflects the exodus of educated youth to cities.

Rural Migration. The U.S. population was predominantly rural until 1920, but due to continuing migration to cities, by 1970 only one-fourth of the Nation's population lived in rural areas. In-migration, largely from urban retirees, increased the rural population somewhat during the 1970s, but then rural areas apparently lost some quality-of-life attractiveness. At present, in- and out-migration are almost balanced (Murray and Keller 1991). These figures do not adequately convey the massive effects of migration on rural life. From 1920 to 1988, the U.S. farm population dwindled from 31 million to 5 million residents. The population of small towns grew through the 1970s, but hard times then hit many. Between 1980 and 1990, more than half of all rural counties lost population (Murray and Keller 1991; Weisfeld 1993).

Older adolescents, young adults, and those in their middle years are most likely to leave rural regions, and, as a result, the young and the old account for greater proportions of the population in rural than urban areas. In 1987, persons between 6 and 17 years of age constituted roughly 20 percent of the population in nonmetropolitan and rural[2] regions, but only 15 percent of core metropolitan and 17 percent of other metropolitan residents. In this same year, over 14 percent of the rural population was age 65 or older, compared to approximately 12 percent of core and other metropolitan residents and only about 10 percent in urbanized nonmetropolitan areas (Braden and Beauregard 1994).

Very different prevention programs may be needed for youth who intend to remain in the rural environment where they grew up and those who hope to leave it. For example, youth who intend to stay in a rural area may be more influenced by local drinking customs whereas those who intend to go may be more influenced by their perceptions of city living. Youth whose decision about staying or leaving is dictated by poverty may drink more than youth with greater freedom of choice about their future. And as some youth actually move away, the transition may increase risk of alcohol use both for those who enter urban environments and those who stay in rural areas depopulated of old friends.

Rural Youth and Work. Bachman and Schulenberg (1993) have reported that work intensity among youth is positively correlated with drinking alcohol, smoking cigarettes, using illicit drugs, interpersonal aggression, theft, victimization, trouble with police, arguments with parents, and lack of sleep, exercise, and educational success. Whether such relationships characterize rural youth is yet to be determined. Compared to male and female students living in large urban areas, youth living in small towns and in the country are less likely to be employed.

Rural youth who work also may be employed under very different circumstances than in urban and suburban settings. For example, seasonal labor may foster alcohol use by rural youth not only because it provides disposable income, but also because it socially integrates local adolescents with older farmhands and itinerant laborers who customarily drink after work or in town on weekends (Chi and McClain 1992). An additional possibility is that rural youth, more than their urban counterparts, work because of family necessity. Nearly 13 percent of rural adults, compared to about 10 percent of urban adults, cannot work at all because of health problems (Braden and Beauregard 1994). Adolescents in the Iowa Youth and Families Study were more likely to engage in both household work and paid employment when their families experienced significant economic pressure and when mothers pursued employment outside the home. Farm boys in particular pursued paid employment and they were the only youth in the study who were more positively perceived by parents as a function of their employment (Conger and Elder 1994). Youth forced to work to contribute to family subsistence may prematurely assume adult roles, including adult drinking behaviors.

Alternatively, they may drink to escape or rebel against the burden of work and family responsibility.

Changes in Rural Communities. Farm mechanization, industrial development, and increased reliance on the automobile have been accompanied by a movement away from traditional rural social structures. Needs that formerly were met by the small, local community are now met by distant and more formal agencies, employers, and commercial enterprises. Murray and Keller (1991) have pointed out that the subtle urban transformation of many rural areas and the decline of local community service structures have also created a decline in the natural support systems that have traditionally been present in rural communities. For example, decreasing proportions of rural Americans participate in the cooperative problemsolving of granges, churches, and other civic groups. Changes in communication patterns and the geographic dispersal of extended families away from rural farms and towns also have strained traditional sources of natural support.

Lack of Rural Resources. The relative lack of resources in rural communities constitutes a double-edged sword for alcohol use prevention. Reynolds and associates (1976) found much truth in the commonly repeated lament, "There just ain't nothing here for young folks." Limited access to employment opportunities and to the diversions and activities found in urban environments undoubtedly encourages rural youth to create their own entertainments, including drinking parties and road trips. At the same time, as the GAO has observed, low population density is incompatible with high-intensity approaches to prevention (Wargo et al. 1990).

Gibbons and colleagues (1986*a*) have argued that due to the lack of financial and treatment resources in rural areas, schools must play a pivotal role in prevention. Nevertheless, many rural school districts are small and resource poor. Such districts often lack the tax base and other resources needed to recruit and retain talented, well-educated teachers, maintain facilities, and provide for the unique needs of children (Weisfeld 1993). The costs of packaged prevention programs may be prohibitive (Rhodes and Jason 1988). After-school programs may not be feasible in some areas because of the need to bus children to their homes. In some rural communities, low educational aspirations and negative experiences of youth and their parents with the school system also limit the potential of school sites for prevention programming (Youth Health Service 1994).

Few rural communities can afford alcohol and drug program specialists (Wargo et al. 1990). In 1988, over 80 percent of rural hospitals had no alcohol and chemical dependency services whatsoever, and nearly that proportion had no psychiatrist on medical staff (Mick et al. 1993). Psychologists are concentrated in urban areas (Murray and Keller 1991). Due to the lack of these and other human resources, professional workers in rural areas must be generalists. Rural teachers must perform a wide variety of educational services; rural health care workers must provide a broad array of health services; and rural police must handle the full range of law-enforcement problems. Wargo and associates (1990) have cautioned that individuals in these jobs, no matter how dedicated, can hardly be expected to develop expertise in, or devote much time to, drug issues. Collaboration has been identified as essential to effective rural programming (Helge 1990; Laws 1991; Wargo et al. 1990), but limited funding for all youth services can cause turf battles and failed collaborative efforts (Youth Health Service 1994).

Rural Culture. Rural people are known as self-sufficient, self-reliant, and distrustful of outsiders (Human and Wasem 1991). Rural areas also have been characterized as more conservative, religious, unified, and family centered than urban ones (Kelleher et al. 1992; Reynolds et al. 1976). For these reasons, prevention programs may lack acceptance or encounter great resistance in some rural schools and communities (Richmond and Peeples 1984; Wargo et al. 1990).

Informal social controls are thought to be stronger in rural communities than in cities (Lichter et al. 1993), but Kelleher and associates (1992) have suggested that social sanctions against youthful drinking may vary by gender and rural region. Observing that the drinking patterns of young girls living in the Arkansas Delta differ from those of girls in the Ozark highlands, these investigators proposed that in more socially conservative, traditional, and isolated communities, young women of childbearing age may receive fewer rewards and more punishing feedback for drinking. This hypothesis is consistent with Sarvela and McClendon's (1987*b*) finding from upstate Michigan that more girls than boys felt guilt after drinking. However, it is also possible that strict social controls foster rebellion and thus encourage teenage drinking.

Reynolds and colleagues (1976) have suggested that rigid social restrictions in rural areas are analogous to the physical restrictions of an urban ghetto. They observed that strict behavioral codes combine with primary face-to-face relationships and a predilection for "visiting" (gossip) to produce a skeleton in almost everyone's closet. One consequence is that local professionals do not, or are not permitted to, function at maximum capacity (Reynolds et al. 1976). Smalltown social networks also make maintaining client confidentiality and anonymity difficult (Youth Health Service 1994).

Reynolds and colleagues (1976) were unable to explain the tolerance of rural communities toward the considerable number of residents with measurable mental illness; however, at another point in their book, they remarked that aberrant behavior is met with standard rationalizations. This suggests that, despite strong verbal expressions of strict behavioral standards, some rural communities may in fact tolerate a great deal of deviance. By assuring a continuous supply of fresh material for visiting, such a convention could function culturally to foster extended social interactions among otherwise isolated community members.

Yet another possibility is that some rural communities regard teenage drinking as normative rather than deviant behavior (Bloch et al. 1991). Giesbrecht and Pranovi (1986) reported from experiences in small Ontario towns that normal drinking is broadly defined and deviant drinking is identified ex post facto. Neither concept appears to have a quantitative referent. Instead, people seem to assess others by their actions and interactions in relation to alcohol, and not primarily by the amount of alcohol consumed. Further, these investigators found that drinking is linked to notions of personal rights, privileges, and status. Rural residents believe that hard work or vigorous play deserves a reward, and drinking is a commonly acceptable form of taking and receiving rewards. These themes characterize general Western culture, from which rural American culture cannot be separated. Thus Gerbner (1990) has pointed out:

> In Western art and literature, drinking tends to be associated with relaxation, sociability, and coping with the rules and pressures of the game of life; drunkenness, with testing or breaking those rules . . . Advertising and the portrayal of drinking in general media content play on such associations. In so doing, they form the most pervasive common cultural bases for cultivating assumptions about drinking in American society (p. 98).

Minority youth are influenced both by modern American culture and by the traditional culture of their ethnic group. May (1986) has explained that most Native Americans, particularly the young and middle aged, therefore must cope with two systems of social control, and proposed that Indians who have meaningful roles in both modern and traditional cultures are least susceptible to alcohol and other drug misuse. Those who are well integrated into one world but not the other also have low susceptibility, but not so low as the first group. Indians who are marginal to both cultures are at greatest risk for substance abuse. Wright and Watts (1985) discussed ambivalence in American culture toward alcohol, ethnic minorities, and youth to make the point that all three terms are socially loaded. These authors concluded that alcoholism among minority youth cannot be understood apart from their environment and life conditions.

Rural Diversity. The preceding discussion indicates that numerous macrolevel forces in the social environment may affect the ecology of alcohol use by rural youth. Specific influences on drinking are likely to vary with the interaction of these forces in particular communities. Diversity in the factors affecting alcohol use by rural youth therefore should be expected, for rural America is extremely heterogeneous.

Rural poverty, for example, is not equally distributed. Of 242 nonmetropolitan U.S. counties with chronically depressed economies, 224 are located in the South (Bender et al. 1985). Some rural areas contain significant numbers of ethnic minorities, often physically isolated with special social service needs (Murray and Keller 1991). Rural communities are also heterogeneous with respect to age structure, occupations, culture, religiosity, lifestyles, distance from metropolitan centers, geographic terrain, population density, transportation and communication linkages, and many other variables that may affect the development and prevalence of youthful drinking. Not the least of these is adult alcohol use prevalence, for adult drinking rates vary widely in rural areas (Blazer et al. 1987; Mick et al. 1993).

EFFORTS TO PREVENT ALCOHOL USE BY RURAL YOUTH

Efforts to prevent alcohol use by rural youth mirror the diversity of rural people, schools, and communities. Variations in objectives, sponsorship, age groups targeted, settings, and activities make these programs difficult to classify. Ultimately, each is unique. Once this is acknowledged, some general observations can be made about rural prevention programs described in the literature. These are followed by a more detailed description of rural school- and community-based prevention efforts, as well as a brief section on policies relevant to alcohol use by rural youth.

Very few rural programs focus solely on the prevention of youthful drinking. Instead, the prevention of alcohol and other drug use are approached together. Goals and objectives tend to be generally rather than specifically stated and to vary with program sponsorship. Projects supported by CSAP are required to endorse a philosophy of youth abstinence from substance use. Almost all of these projects are based on the risk factor model and try to reduce at least two risk factors from different domains. Information is not readily available on the risk factors targeted by CSAP grantees in rural areas, but, in 1993, the percentage of all CSAP projects addressing each risk factor domain was as follows: individual, 70 percent; family, 50 percent; school, 50 percent; peer, 40 percent; and neighborhood/community, 40 percent (CSAP 1993*b*).

The relatively few rural prevention programs organized by university researchers have aimed to delay the onset of smoking and drinking and to reduce use prevalence of tobacco, alcohol, and sometimes marijuana among youth in particular grades, usually seventh. These programs have been guided by social normative theory, and most have been implemented in school classrooms using diverse instructional and skill-building techniques. Project Northland, a 5-year research and alcohol use prevention project now being conducted by investigators from the University of Minnesota in the northeastern area of that State, is applying social normative theory on a larger scale. With funding from NIAAA, this project will test the extent to which simultaneous implementation of school and peer-led curriculums, parent involvement, and community-based activities changes social norms about youthful alcohol use and effects a related drop in the prevalence of youthful drinking (Perry et al. 1993; Wagenaar and Perry 1994).

Alcohol use prevention programs conducted by rural school districts and communities without outside sponsorship understandably are more limited in scope. Most such programs are not based on an explicit theoretical framework, but rather reflect reasoned assumptions about what is needed and creative use of available resources. Programs sponsored by local service organizations usually try to coordinate referrals and treatment resources. Those organized by civic groups often strive to prevent alcohol and other drug use by developing youth leadership or by providing young people with new options for recreation and employment. One apparently cosponsored program sought to help Native American youth at high risk of drinking monitor and moderate their alcohol use (Carpenter et al. 1985).

When descriptions of rural alcohol prevention programs for youth are considered against the larger literature (e.g., Bangert-Drowns 1988; Gardner et al. 1994; Hansen 1992, 1993; Moskowitz 1989; Polich et al. 1984; Schaps et al. 1986; Tobler 1986, 1992; GAO 1992*a*), no distinctively rural strategy can be identified. Rural prevention efforts appear to cover the spectrum of approaches found in urban areas; however, no data are available on the proportion of rural youth exposed to each type of program or program component.

No descriptions of rural prevention programs for African-American, Asian-American, and Hispanic youth were found in the literature review. On the other hand, almost all substance use prevention programs for Native American and Alaska Native youth have been organized on reservations and in nearby rural communities and school districts (Indian Health Service 1987; May and Moran 1995; OSAP 1990). These programs employ the full range of strategies characterizing prevention initiatives in general, but most also include efforts to help Indian youth understand and take pride in the history, values, and culture of their people. Methods include incorporating cultural symbols in program materials and activities; learning traditional songs, dances, ceremonies, rituals, and crafts; visiting cultural resources; and attending tribal events such as feasts, fairs, and powwows (CSAP 1993*b*; OSAP 1990). Some programs involve Indian elders or other community leaders in activities. Others have been initiated, planned, and implemented by Indian leaders either for youth specifically or for all members of their community (Gardner et al. 1994; OSAP 1990).

School-Based Programs

Because the great majority of young people are enrolled in school, alcohol and other drug use prevention programs for youth across the Nation are concentrated in this setting (NIAAA 1994*a*). Although only one-third of America's children are rural, two-thirds of U.S. school districts are located in rural areas (Laws 1991). In 1990 to 1991, an estimated 96 percent of these 8,913 rural districts provided at least three types of drug education for students. Classroom instruction was a program component in nearly all districts, augmented variously by extracurricular activities, drug-free social events, and intervention services. In addition, many rural school districts conducted training programs for teachers and staff, parent programs, and educational programs in the community (GAO 1992*b*). The degree to which these efforts focused specifically on the prevention of alcohol use is unknown.

The inclusion of multiple components in school-based prevention programs is thought to increase their effectiveness (NIAAA 1994*a*). As currently conceptualized, these programs therefore should provide factual information about the harmful effects of drugs, support and strengthen students' resistance to using drugs, carry out collaborative drug abuse prevention efforts with parents and other community members, and be supported by strong school policies as well as services for confidential identification, assessment, referral to treatment, and support groups for users. Such support is often provided through a student assistance program (DHHS 1991).

School-based alcohol use prevention programs in rural areas appear to include some, but not all, of these elements. Although the rationale for specific activities differs, collectively they are often justified in terms of strengthening factors that protect young people against substance use and reducing factors that place them at risk (Gardner et al. 1994). Evaluation of these approaches is generally lacking.

Classroom Instruction. According to a survey conducted by the GAO (1992*b*) during the 1990-91 school year, 99 percent of rural school districts provided classroom-based drug education, but most limited this instruction to students in selected grades. Classroom education generally covered the effects of alcohol and drug use, as well as the development of life skills such as decisionmaking. Some districts taught these topics through regular subject matter areas such as health or science; others purchased a specific curriculum package that was delivered to students in a special class. About 37 percent of the districts used at least part of a model curriculum for drug use prevention distributed free of charge to public and private schools by the Department of Education in July 1990. No data were collected on alcohol-specific education or on the methods, duration, or effectiveness of classroom drug education.

Affective education figures prominently in descriptions of alcohol use prevention demonstration programs based in rural schools. This approach, guided primarily by humanistic psychology, emphasizes the development of personal capabilities such as self-esteem, skill in making decisions and solving problems, and understanding how alcohol use can interfere with personal values and goals (Bangert-Drowns 1988; Hopkins et al. 1988; Kim 1988; Schaps and Slimmon 1975; Tobler 1986). Sarvela and McClendon (1987*a*) found that a mixed affective-cognitive drug education program had no effects on substance use rates or related health beliefs among 265 sixth and seventh grade students in rural northern Michigan and northeastern Wisconsin. This result is consistent with those from evaluations in urban areas indicating that programs based on the affective model have little or no impact on youthful alcohol and other drug use (Hansen 1993; Hopkins et al. 1988; Kim 1988; Moskowitz 1989; Tobler 1992). Nevertheless, this approach has been adopted by entire States (Tobler 1992), and Helge (1990) recommends it above all others for rural schools.

Collins and Cellucci (1991) tested a program on drinking and driving for 52 rural South Carolina students in the 11th and 12th grades. At 1-month followup, students who received the educational program with or without professionally produced public service announcements demonstrated greater knowledge than students in a control group, but no effects on attitudes or alcohol involvement were observed.

The literature contains very few reports of theoretically driven, research-based alcohol prevention curriculums implemented in rural classrooms. Dignan and colleagues (1985) tested a program based on the social influences model with seventh graders in rural North Carolina and found no effects on alcohol use. Evaluating a different social influences program in urban, suburban, and rural schools in Oregon and California, Ellickson and colleagues reported only short-lived effects on alcohol use by seventh graders (Bell et al. 1993; Ellickson and Bell 1990; Ellickson et al. 1993). Both of these evaluations observed a boomerang effect in that the attitudes or substance use behavior of some students exposed to the program changed in the unintended direction.

Gilchrist and associates (1987) tested a life skills curriculum in reservation and nonreservation schools in the Pacific Northwest, and Botvin and associates (1995) reported findings from a longitudinal trial of another life skills curriculum with students from urban, suburban, and rural schools in the eastern United States. Both programs showed positive effects on alcohol use, but neither these evaluations nor the one by Ellickson and associates distinguished rural and urban youth in data analysis.

Schinke and coworkers (1988*b*) evaluated a prevention program that taught bicultural skills to Native American youth from reservations in western Washington. Sites were randomly divided into treatment and control conditions, and youth in the treatment condition received 10 group training sessions on bicultural competence. The authors found modest support for this approach. At 6-month followup, exposure to the program was associated with lower alcohol use as well as more knowledge about alcohol and other drug use, higher levels of self-control, and greater assertiveness.

After comprehensively reviewing efforts to prevent alcohol misuse among Native Americans, May and Moran (1995) concluded that in recent years most prevention programs for this population have been school-based initiatives that emphasize information about the effects and consequences of substance abuse. Programs such as "Here's Looking at You," "Project Charley," and "Babes" have been used in many Indian communities both on and off reservations, but with little evaluation of these or other approaches. A survey by the Indian Health Service (1987) and an OSAP (1990) publication provide more detailed program descriptions.

Extracurricular Activities and Drug-Free Social Events. In 1990-91, over 80 percent of rural school districts reported holding drug education assemblies with guest speakers, most of whom discussed their own drug abuse problems. Approximately three-fourths of these districts held a "red ribbon drug awareness week" during which the drug-free message was emphasized through a variety of activities and special events. Student drug awareness clubs and drug education workshops were organized by over half of the districts, and about 30 percent held drug education camps. Smaller percentages reported drug awareness balloon launches and parades. Over half the districts sponsored drug-free prom night activities and about 34 percent sponsored similar activities the evening of graduation (GAO 1992*b*). Yet another approach is illustrated by a project implemented in five rural high schools in Lake County, California: Groups of peer helpers led by a core group of counselors at each school planned their own agendas for school and community service (CSAP 1993*b*).

Student Intervention Services. During the 1990-91 school year, 91 percent of rural school districts provided drug abuse counseling to individual students. About half the districts had student support groups facilitated by professionals from local drug and alcohol agencies or trained volunteers. Peer helpers were available in 39 percent of the districts. Approximately 50 percent of the districts provided intervention services as part of a formal student assistance program that included early identification of student problems, in-school services, referral to outside agencies, and followup (GAO 1992*b*). In addition to these activities, some rural substance abuse prevention demonstration programs provided academic tutoring and mentoring for students at high risk of alcohol and drug use (Gardner et al. 1994).

Peer-Managed Self-Monitoring. Carpenter and colleagues (1985) pilot tested a peer-managed self-control program organized in a residential high school to teach responsible alcohol consumption to 30 Native American teenagers who were at high risk for problem drinking. Despite methodological limitations in the study design, results were encouraging: Significant decreases in quantity and frequency of drinking were observed and maintained over a 12-month period following the training. Commenting that teenagers who already drink are unlikely to respond favorably to programs emphasizing abstinence, these investigators encouraged further consideration of the moderation model in prevention programming.

Parent Involvement. Rural schools have attempted to address family-level influences on alcohol and drug use through parent education and direct involvement of parents in prevention programs. All program managers of the Native American and Alaska Native OSAP demonstration grants have reported family involvement, with 50 percent and 31 percent indicating great or moderate involvement, respectively (OSAP 1990). The 1990-91 survey of rural school districts found that about half provided parenting skill classes, but several districts expressed problems in obtaining parent participation, and 39 percent of all districts saw great need to expand their parent programs (GAO 1992*b*). Very little research has assessed the effects of parent programs on children's alcohol use behavior (NIAAA 1994*a*), and such studies are methodologically difficult (Klitzner et al. 1990*b*).

Community Involvement. School-based substance use prevention demonstration projects in rural areas report participation not only by teachers, students, administrators, staff, and parents, but also by law enforcement officials, clergy, chemical abuse professionals, county agents, public health nurses, and church and civic leaders (Richmond and Peeples 1984; Wiesner 1988). Some schools also work with community agencies to coordinate health and social services for youth, or to provide them with recreational opportunities, leadership training, and jobs. Such widespread participation has been identified as a key ingredient of program success (Perry 1986; Wiesner 1988). Nevertheless, the roles of various individuals and groups are not always described, and the effects of their involvement remain uncertain.

Funding. An estimated 86 percent of rural school districts received Federal Drug-Free School funds for school year 1990-91. Most districts that did not receive funds from this source enrolled fewer than 1,000 students and either did not know how to apply for funds or perceived that they did not have a drug problem. Federal drug education grants to rural school districts were relatively small, ranging from $350 to $127,000, with a median value of $5,200. These funds paid for between 2 and 100 percent of the total drug education programs implemented in each district, underwriting a median of 75 percent of drug education costs in large districts compared to a median of 50 percent in small districts. Nearly 90 percent of the districts also reported using district funds for drug education, while over 40 percent received support from private organizations and groups. About one-third of the districts received other State or Federal grants for drug education, and about 25 percent received other public funds for this purpose (GAO 1992*b*).

Approximately one-fourth of the rural school districts receiving Drug-Free Schools funds had no drug education program before Federal funding became available. Other rural districts had programs, but used Federal resources to expand them. In 1990-91, almost all rural school districts still saw a need for program expansion, but half reported that this could be accomplished without additional funding. The most frequently mentioned unmet needs involved counseling and other intervention services (36 percent) and programs for parents and others in the community (31 percent) (GAO 1992*b*).

Community-Based Prevention Programs

Community-based alcohol and other drug prevention programs have been organized in rural areas by professionals in schools and community agencies, local business leaders, service clubs, local activists, and external sponsors. Many of these programs involve young people and other members of the community in assessing issues of alcohol use and generating possible solutions. As with school-based prevention programs, community-based efforts to prevent alcohol use by youth vary along many dimensions. Most of these appear to focus specifically on youth and to support, complement, or even substitute for school-based prevention efforts. A few programs approach alcohol use prevention more comprehensively, but, as illustrated by May and Moran's (1995) review of prevention programs in Native American communities, definitions of "comprehensive" differ widely.

Community Programs for Youth. Some rural prevention programs provide high-risk youth, and at times their families, with education, counseling, case management, and health and social services at one or more community sites (e.g., Youth Health Services 1994). Other rural communities organize drug-free youth groups, retreats, and outdoor adventures to develop youth peer leadership, to foster cooperation among young people, to develop their self-discipline, and to help high-risk youth bond with each other, their schools, and communities (Kneidek 1989; Rhodes and Jason 1988; Schroeder 1988).

Media Campaigns. To broaden the base of support for prevention, most community-based projects try to increase community awareness about alcohol use prevalence and related problems, and some have conducted local media campaigns for that purpose (CSAP 1993*b*). Moffatt and colleagues (1989) also have reported a multimedia program promoting responsible attitudes toward alcohol use in four small, single-industry towns in northern Ontario. A 5-minute alcohol education film was shown prior to the main feature in independent commercial movie theaters over a 4-month period. This project was evaluated with a viewer questionnaire, but the return rate was less than 30 percent and results were not reported by viewer age.

Community Coalitions. In recent years, community task forces or coalitions have become the preferred approach for planning and coordinating community prevention programs. Examining a variety of such community activation initiatives, Wickizer and associates (1993) found few meaningful differences in the response of urban and rural communities. However, regardless of community size, activation levels varied directly with community income.

Rissel and fellow researchers (1995) identified factors affecting member participation in 10 community coalitions formed in conjunction with Project Northland. Coalition members typically were females who had children and who belonged to a number of other community or social groups. Members were likely to participate more actively in the task forces if they were relative newcomers to the community and if they found their participation satisfying. Satisfaction, in turn, was associated with the amount of control and ownership each member experienced in the task force and with agreement about the task force's direction. The authors observed that to mainstream task force efforts and to be effective in delaying or preventing alcohol use by adolescents living in smaller rural communities, it may be necessary to recruit members who have lived in these communities most of their lives. Despite methodological limitations, this study represents an important effort to illuminate the dynamics of community participation in rural alcohol prevention projects.

Community Team-Building and Networking. Schroeder (1988) has described 3-day retreats organized by the Alcoholism Council of Nebraska for teams of community leaders, school personnel, and students to facilitate cooperation in reducing alcohol and drug problems in rural communities. The retreats were divided into four major components: team- and trust-building, education and identification of at-risk individuals, a review of successful prevention programs, and a planning session for short- and long-term programs. To keep participating communities in contact with one another, the council published a newsletter, attended team meetings in the communities, and provided 2-day reunion retreats where alumni community teams could share ideas, successes, and failures.

Community Development. Efforts to prevent youthful alcohol use also may result from the involvement of rural residents in comprehensive community self-assessment and improvement projects. Alcohol use may or may not be the central focus of community-development initiatives, but the story of the Alkali Lake band of Shuswap Indians exemplifies what can be accomplished. By revitalizing Indian spiritual and cultural practices, economic self-sufficiency projects, Alcoholics Anonymous, and other therapeutic means, this community reduced the incidence of alcoholism within their population from 95 percent to 5 percent within a 10-year period (Guillory et al. 1988).

Grassroots Movements. During the late 1970s, concerned by an apparent upsurge in alcohol and drug use, thousands of highly visible grassroots groups formed throughout the country to take action against these problems. Groups were of two types, each relating to different national umbrella organizations. In parents' groups, estimated to number between 1,000 and 3,000 by the early 1980s, members sought to educate themselves about youthful drug use and to support one another in enforcing a no-drug lifestyle among their children (Klitzner et al. 1990*a*, 1990*b*). Groups against drunk driving, which by 1985 included over 450 local organizations as well as regional and statewide coalitions, sought through legislation, law enforcement, and education to prevent alcohol-related motor vehicle deaths and injuries (Wolfson 1989). The review conducted for this chapter failed to uncover data on the extent to which rural communities have been involved in these movements.

Participation in Statewide Coalitions. Some States also have organized coalitions to pass legislation related to alcohol prevention objectives. No data on rural participation in such coalitions were discovered, but a case study of a statewide coalition in New Mexico provides insight into ways that residents of rural communities might become involved. Although the New Mexico initiative originated in Albuquerque, the largest urban area in the State, rural residents could join a 200-mile walk of citizens seeking legislative change or a subsequent statewide "Care-a-Van" to the State capital. Media coverage was local, as well as statewide and national. Results of a questionnaire survey of candidates for statewide office were sent to local media and the districts that candidates were representing. A legislative handbook also was created and mass distributed to communities throughout the State. Some rural communities held town hall meetings and hearings on proposed local ordinances. Even where this was not the case, rural residents could offer recommendations to the statewide coalition, call or write their representative in the State legislature, and vote (Stivers 1994).

Policy Approaches

During the 1980s, fueled by the demands of grassroots citizen action groups and the media attention they generated, the U.S. Congress and State legislatures passed numerous laws to reduce the availability of alcohol, regulate conditions for drinking, and impose stiffer sanctions for violations of alcohol-related laws (Grossman et al. 1994; Hingson et al. 1988; Howard et al. 1994; McCarthy 1993; NIAAA 1994*a*; Sweedler 1990). Federal and State alcohol control laws pertain to youth in rural as well as urban areas, yet reference to them is curiously absent in the rural alcohol prevention literature. No research was discovered describing how these laws have affected rural youth, and little information exists on the effectiveness of law enforcement in reducing drug abuse in rural areas (Wargo et al. 1990). Similarly, no accounts were found of policy initiatives organized by rural communities to prevent or reduce youthful drinking.

May and Moran (1995) have pointed out that prohibition has not been effective in preventing alcohol use by Native Americans, and that this policy, in fact, may have encouraged alcohol-abusive behavior. These authors reviewed other policy options for Indian communities, noting that many now refuse advertising from beer companies and that powwows have generally become alcohol-free events.

A PUBLIC HEALTH ANALYSIS OF RURAL PREVENTION EFFORTS

This review indicates that most rural schools and many rural communities are engaged, often with creativity and deep commitment, in efforts to prevent alcohol and other drug use by rural youth. At the same time, the prevalence of youthful drinking and heavy drinking in rural areas indicates that something is not working.

A public health perspective directs attention to three potential sources of difficulty: problem definition, program design and implementation, and evaluation of program effectiveness. An assessment of rural prevention approaches reveals weaknesses in each of these areas. However, such analysis also identifies directions for strengthening rural alcohol use prevention policy, programs, and research.

Problem Definition

As currently defined by Federal policies and many rural prevention programs, any alcohol use by persons under 21 years of age is the problem to be prevented. This definition appears to have its origins in data that began to appear in the 1970s showing that young drivers accounted for a disproportionate share of motor vehicle fatalities and that alcohol use was involved in at least half these fatal crashes (Grossman et al. 1994). Because alcohol use by young people was identified as an underlying cause of traffic deaths, the solution proposed was to raise the minimum drinking age to 21 years. By 1988, this policy had been adopted by all States and the District of Columbia (Grossman et al. 1994; McCarthy 1993).

As States passed legislation to raise the drinking age, the problem was redefined as use of alcohol by minors. Problem prevalence was no longer measured by thousands of teenage alcohol-related traffic fatalities, but by millions of youth who had ever used alcohol, "even a sip." Changes in the drinking age further inflated the number of young people affected; between 1977 and 1984, an estimated 4 million youth under age 21 were transformed into illegal alcohol consumers (McCarthy 1993). The magnitude of the problem thus multiplied manyfold.

A second consequence of raising the drinking age was that the Federal Government identified any alcohol use by persons under 21 years of age as substance abuse (Wargo et al. 1990). Teenage drinking became inextricably tied to the use of marijuana and other illicit drugs. Once more, the problem was redefined and expanded. Youthful alcohol use no longer was a separate issue, but as symbolized by the AOD acronym, part of the alcohol and other drug (AOD) use constellation. Complete abstinence from AOD was adopted as the goal of Federal youth prevention initiatives (OSAP 1989), for as then Secretary of Education William Bennett (1986, p. vi) proclaimed, "Preventing drug experimentation is the key." This goal was institutionalized by creating the Office of Substance Abuse Prevention in 1985[3], passing the Drug-Free Schools and Communities Act of 1986, and launching the Partnership for a Drug Free America with Government encouragement, major corporate support, and substantial media attention.

Gusfield (1981, p. 187) has explained the social processes involved in this phenomenon. To create legitimation and functional response to their power and interests, ruling groups socially construct reality and "a set of motives and directions in the ruled." Scientific personnel, journalistic and policy groups, and occupations and movements interpret particularistic data as definitive and generalized scientific knowledge. Language and style of presentation dramatize this knowledge as a certain, definitive, and accurate base for justifiable policies. A moral posture also is commanded or induced. Through this rhetoric, technical and moral realities are created and given form as socially shared facts and values. As cultural hegemony develops, the certitude of the socially constructed reality is not doubted. One perspective on the problem is accepted as truth, and other perspectives are not seen. One system of asking questions about the issue excludes other ways of asking.

Consistent with Gusfield's analysis, alcohol use by rural youth has been subsumed by a socially constructed national drug use crisis. Several assumptions thus have come to be taken for granted.

Youthful Drinking Is AOD Use Behavior. Defining the problem as any AOD use by youth encourages treating alcohol and other drug use as the same behavior. This undoubtedly has been useful in compelling public attention, and as Dryfoos (1990) has pointed out, counts of AOD "ever users" have been promulgated as public relations symbols for the media and legislators. However, the AOD use concept reduces multiple behaviors to a single abstract variable. Such reductionism obliterates the complexities of youthful drinking practices and the processes through which they develop. Because the behavior to be prevented is inadequately defined, prevention planning lacks precision.

AOD Use by Youth Has Multiple Negative Consequences. Current prevention approaches are based upon the assumption that any AOD use increases the risk that youth will suffer an alarming array of negative consequences. This claim is supported by research evidence indicating that alcohol and tobacco use precedes use of marijuana and other illicit drugs (Ellickson et al. 1992; Kandel 1975, 1982; Yagamuchi and Kandel 1984), that drug use initiation before age 15 increases the risk of dysfunctional use or abuse in later years (Ellickson and Hays 1991; Ellickson et al. 1992; Robins and Przybeck 1985), and that heavy alcohol or illicit drug use leads to a cascade of health and social problems (NIAAA 1994*a*).

Linking any use of any substance to all of these negative effects underscores the seriousness of the problem as currently defined and highlights the importance of preventing initial AOD use. However, such thinking ignores the epidemiological concept of relative risk. The probability that each negative outcome will occur is not equal. Children and adolescents can readily reach this conclusion themselves by observing the effects of alcohol use on peers, parents, and others in the community. Prevention messages that inflate the dangers of youthful alcohol use therefore may lack credibility. Nevertheless, a priority strategy for national drug control is to "convince children, particularly those at high risk for first-time drug use, that drug use is a dangerous and potentially deadly activity that must be avoided" (Brown 1995, p. 33).

Some investigators hold that the majority of alcohol-related death and disability is attributable to moderate drinkers, not to those who are alcohol dependent (e.g., Moskowitz 1989; Wagenaar and Perry 1994). Others have concluded that experimental AOD use by youth does not appear to be personally or socially destructive (Chen and Kandel 1995; Dryfoos 1990; Kandel et al. 1986; Newcomb and Bentler 1988; Shedler and Block 1990). Although the effects of light or moderate drinking thus remain in dispute, data clearly show that the great majority of young people who drink experimentally or lightly do not become heavy or problem drinkers, go on to use illicit drugs, or engage in other problem behaviors. These and other negative consequences are related to the frequency, amount, and duration of youthful alcohol use (Hansen and Graham 1991), as well as to other factors. Progression to alcohol abuse and alcoholism, for example, has been attributed to personality characteristics, family dynamics, social and economic factors, and genetics (Miller 1984). Motor vehicle crashes result not only from alcohol use, but also from interactions with traffic, vehicle, and road conditions (Gusfield 1981).

Prevention experts have recommended that experimental and light drinking by youth be distinguished from regular and heavy teenage alcohol use so that the relationship between different drinking patterns and the prevalence of negative outcomes can be more clearly established (e.g., Dielman 1994; Donovan and Jessor 1983; Sarvela and McClendon 1987*b*). Unfortunately, the current definition of the AOD problem has deflected attention of researchers and prevention planners away from identifying how variations in youth alcohol consumption are related to specific problems that youth experience. Similarly, the identification of factors other than drinking causally implicated in these problems has been neglected. This has encouraged generalized approaches to AOD use prevention rather than initiatives carefully targeted to reducing specific problems.

Common Risk Factors Lead to All Forms of Youthful AOD Use. Definition of the problem as any AOD use by youth has been accompanied by widespread acceptance of the proposition that common risk factors lead to all forms of substance use behavior. This assumption also promotes generalized approaches to the prevention of youthful drinking and other drug use behaviors.

Nevertheless, no risk factor has been definitively identified as a common cause of AOD use by children and adolescents. To the contrary, research indicates that not every risk factor is correlated with every type of substance use. Moreover, risk factors change with age and development, exposure to risk factors varies, complex interactions between risk factors and other variables influence youthful drinking, risk factor indices do not explain a large portion of the variance in youthful alcohol use, and even among children exposed to potent risk factors, it is unusual for more than half to develop serious disabilities or persistent disorders (Boyd et al. 1994; Donnermeyer and Huang 1991; Engstrom 1984; Kumpfer 1989; Lorion et al. 1991; Moncher et al. 1990; NIAAA 1994*a*; Newcomb et al. 1986; Shedler and Block 1990; Werner 1990).

Causal relationships between risk factors and alcohol consumption are poorly understood, and experts have now concluded that no single etiological pathway is likely to explain and predict youthful drinking behavior (Boyd et al. 1994). Additionally, as Shedler and Block (1990) have demonstrated through longitudinal research, phenomena currently identified as risk factors may be symptoms, not causes, of the problems actually responsible for teenage substance abuse. Finding that such problems can be traced to the earliest years of childhood, these investigators suggested that current drug prevention efforts are misguided to the extent that they do not focus on the underlying issues of personal and social maladjustment.

The assumption that the same risk factors predict all forms of substance use by youth ignores differences in the place that alcohol and other drugs occupy in American society. Alcoholic beverages are heavily advertised, readily available in commercial establishments, legally sold to adults, and widely used in many social settings. Both young people and adults use alcohol at a higher rate than other drugs. In 1992, for example, among rural youth ages 12 to 17, the 30-day use prevalence rate for alcohol was 15.7 percent compared to 6.1 percent for any illicit drug; if marijuana is excluded, the latter figure drops to 3.2 percent (SAMHSA 1993*b*). Differential availability, regulation, and consumption of alcohol and other drugs in the social environment logically should be related to differences in risk factors for youthful drinking and other substance use. At a minimum, peer and parental modeling of alcohol use is much more common than the modeling of other drug use behaviors.

AOD Use Is an Urban Problem. Since AOD use has been characterized as an urban problem, surveillance of substance use by rural youth has been slighted. Although national surveys collect data on alcohol use prevalence among nonmetropolitan adolescents, samples are not designed to identify rural regions and communities with the highest rates of drinking or alcohol-related problems. Without this information, policymakers do not have a solid basis for estimating the need for alcohol use prevention in rural areas, administrators cannot distribute resources where they are likely to have greatest impact, and planners do not have data needed to tailor prevention programs to patterns of youthful alcohol use in their service areas.

Funds for prevention therefore have been sprinkled throughout rural school districts, promoting the assumption that the AOD use problem is pervasive. The location of Federal demonstration projects has been determined by ability to write a winning grant application. Even when these applications are based on local needs assessments, the proportion of all rural youth at risk who are reached by these efforts cannot be estimated because the denominator is missing.

Program Design and Implementation

Since the definition of a problem shapes its solution, assumptions about youthful AOD use have fundamentally influenced the design of rural alcohol use prevention programs. In addition to directly affecting decisions about goals, methods, and target groups, these assumptions have limited the data available for prevention planning, hindered critical analysis of the issues, and led to preventive approaches inadequately adapted to rural characteristics.

Unrealistic Goals. The goals of AOD prevention have been criticized as much too broad to focus program efforts and assess preventive effects (Dielman 1994; Thompson et al. 1984). Since youthful drinking has proven very difficult to prevent (e.g., Moskowitz 1989; Rundall and Bruvold 1988), the feasibility of attempting to eradicate alcohol use by youth also has been widely questioned. Thombs and colleagues (1994) observed that such a goal neglects the real goals of adolescents (e.g., fun, excitement, and social facilitation), but instead focuses on preventing the means (alcohol use) through which youth seek goal achievement. Several analysts have cautioned that sustained reductions in youthful drinking may not be achievable without major societal changes in alcohol consumption (Benard et al. 1987; Ellickson and Bell 1990; Ellickson et al. 1993; Moskowitz 1989; Thompson et al. 1984). Others have observed that adolescent experimentation with drinking may be normative, developmentally appropriate behavior in the United States (Jessor and Jessor 1975; Martin and Pritchard 1991; Newcomb and Bentler 1988; Perry 1986; Shedler and Block 1990).

Unproven Prevention Strategies. Reflecting CSAP recommendations, most rural prevention programs attempt to reduce at least two risk factors, as well as to increase protective factors affecting youthful AOD use. Local program organizers determine which risk factors are most important in their schools and communities and how to effect risk factor reduction. Rural prevention planning therefore is based upon the assumptions that the risk factors selected for reduction are important causes of drinking and other drug use by rural youth, these risk factors can be changed by the methods designated, and reducing these risk factors will prevent AOD use by the population targeted.

As already pointed out, risk factors for youthful AOD use are not clearly identified. Moreover, many programs do not use the data now available in selecting risk factors to target. Hansen (1992, 1993) found that of 12 common prevention strategies linked to risk factors, only 4 are strong correlates of teenage drinking: belief that alcohol use is acceptable among youth, low personal commitment to abstain from alcohol use, belief that alcohol use fits with personal values, and lack of awareness of the consequences of alcohol use.

Even if future research should confirm that some currently identified risk factors are causally implicated in youthful AOD use, little is known about effective ways to reduce them. Prevention approaches that increase the personal and social competencies of youth appear promising (Goplerud 1991), but as Kumpfer (1990) has observed, it is unrealistic to expect that a few hours of classroom instruction can develop all of the affective and interpersonal skills needed by youth with multiple deficiencies in coping.

To date, successes in increasing the skills of youth have been demonstrated only in programs systematically implementing carefully developed prevention methods, usually over a period of several years (e.g., Botvin et al. 1995). The literature suggests that, except for a few schools and communities participating in university-sponsored research projects, such programs have not been conducted in rural areas. Although the GAO (1992*b*) found that rural schools teach such skills as decisionmaking, information about the nature, duration, and effectiveness of such instruction was not provided. A traditional (instead of an interactive) teaching style (Ennett et al. 1994; Tobler 1992) and limited program exposure (Benard et al. 1987; Goodstadt 1986; Kumpfer 1990) can fail to produce skill improvement, even if program content is relevant.

Research on the reduction of other risk factors is in its infancy. Whether, for example, parental involvement in AOD prevention programs can alter dysfunctional patterns of parenting is an empirical question that to date has received little research attention. Because data on the modification of risk factors is scarce, almost nothing is known about whether such change reduces youthful substance use. This may not be the case. For example, if risk factors initiate processes leading to AOD use, modifying these risk factors after processes have been set in motion may have little effect on young people's AOD use behavior.

Despite gaps in research knowledge, program developers and prevention practitioners must do what they can to make pragmatic sense of available information. CSAP and other agencies therefore have encouraged schools and communities to adopt those approaches that promise to be most feasible and effective in their unique situations. Little is known about how rural prevention programs have been planned or the considerations that have motivated specific planning decisions, but program descriptions in the literature clearly indicate that assumptions about youthful AOD use have been influential.

This development has been promoted by intense publicity about youthful AOD use, CSAP criteria for prevention program support, guidelines to facilitate local planning (e.g., Bennett 1986; Melear 1990; Rhodes and Jason 1988), bulk distributions of free materials, skillful commercial marketing of untested prevention packages (Hansen 1992; Kumpfer 1990), and the advice of experts themselves convinced by the prevailing AOD use litany. Combined with the newness of the school-based prevention field and the eagerness of practitioners to try promising approaches, these forces have produced what Kumpfer (1990, p. 110) has termed "a single variety bandwagon phenomenon." Due to resource scarcity and professional isolation, rural schools and communities may have been especially prone to unquestioning adoption of the risk factor approach to AOD use prevention.

Another probable reason for the popularity of the risk factor model in rural areas is that almost any activity can be justified within this generic framework. Adoption of the risk factor model as the basis for program development therefore represents only a cosmetic advance over advice provided at the first National Conference on Drug and Alcohol Abuse Prevention sponsored by NIDA and NIAAA: attendees were told that they need not test educational programs and curriculums directed at preventing drug abuse, but that instead they should design programs that "feel right" (Engs and Fors 1988).

With such freedom, rural schools and communities can use funds for AOD prevention to support projects of untested value or to address a spectrum of youth needs not central to substance use prevention. The dictum that multiple risk factors should be targeted in prevention programs further encourages broad planning. Helge (1990) and Laws

(1991) thus have advised rural schools and communities to develop holistic prevention approaches that address the emotional, physical, academic, and social needs of students and that involve families in program planning and implementation.

Age Groups Targeted. Because behavior is theoretically easier to prevent before it is initiated, AOD prevention efforts in schools and communities have been concentrated on young people who have not yet started to drink or are in the initial stages of experimentation (Hansen 1993). Based on research findings that substantial numbers of youth begin drinking during early adolescence, most prevention programs to date have targeted youth in transition from elementary to middle or junior high school. However, failures to prevent alcohol use in this age group coupled with data showing decreases in age of first drinking have led to recommendations that prevention efforts be directed to younger and younger children (Binion et al. 1988; Gibbons et al. 1986*a*; Goplerud 1991; Laws 1991; Sarvela and McClendon 1987*b*, 1988; Schaps and Battistich 1991).

Promoting abstinence from drinking in very young children may not be a wise use of AOD prevention resources. Motivations to drink change as development progresses (Gordon and McAlister 1982; NIAAA 1994*a*), and pledges made in childhood therefore lose their meaning in the adolescent years. For this reason, some drug prevention programs for young children are generic in nature and have a number of broad developmental goals (Gardner et al. 1994; Schaps and Battistich 1991).

Some preliminary evidence indicates that early intervention to increase children's self-esteem, social competence, and bonding with social institutions does have positive outcomes (Schaps and Battistich 1991). Fostering the healthy development of children is a worthy goal, but this is a general aim of education, as well as of many health and social programs. Justifying and pursuing this broad goal solely in the name of AOD use prevention therefore potentially trivializes its far-reaching importance. In addition, this narrow approach may foster dependence on drug prevention resources to support education that should be incorporated in all parts of the school curriculum and in community-based programs for children and adolescents.

Youth who already have started to drink have been deemed inappropriate targets for primary prevention efforts. Although data show that young people initiate drinking throughout adolescence, no primary prevention efforts directed to older youth and young adults were discovered in the literature. Some rural prevention projects include case-finding and treatment of adolescents experiencing problems related to AOD use. Consistent with the current definition of the problem and terminology in the chemical dependency field, these project components are commonly called "interventions." Less often, they are viewed from a public health frame of reference and termed secondary "prevention."

Current approaches to AOD use prevention thus neglect adolescents who have not yet initiated drinking or who have done so only experimentally. Most youth in this age group are involved in AOD programs only when their drinking has been identified as a problem. This situation reflects the practice of targeting prevention programs to young people in particular age groups without recognizing within-group behavioral heterogeneity. Since the proportion of students who have tried alcohol increases with age, primary prevention programs are typically developed only for age groups known to have a low prevalence of ever using alcohol. These groups are treated as if all members have never tasted alcohol or tried an experimental drink (Goodstadt 1986). Youngsters who have used alcohol thus may feel excluded from these programs or regard them as irrelevant.

Problems in Implementation. The design of prevention programs should consider not only what strategies are likely to be effective in reducing a problem but also whether these approaches are feasible in a particular setting and what supports are needed to translate plans into practice (Goplerud 1991). Successful implementation of a prevention program involves several stages that depend heavily upon internal project organization, as well as many other factors. Monitoring is recommended as the program is delivered to ensure that adaptations do not compromise elements deemed essential to the achievement of prevention objectives and that adjustments are made as required (Price and Lorion 1989). Little is known about these aspects of alcohol use prevention in rural areas, but the ways in which particular strategies are implemented can be expected to vary with differences in program leadership, school and community characteristics, and resource availability.

Barriers to rural prevention efforts have not been systematically studied, but some obstacles have been identified. Entrenched poverty, geographic and subcultural isolation, wide dispersion of the population, poor or absent public transportation, and extremely limited public resources constrain what can be done by both schools and communities (Murray and Keller 1991; OSAP 1991; Youth Health Services 1994). Also, rural youth are much more mobile than expected, making continuity of involvement in prevention programs difficult (Youth Health Service 1994).

Additional issues affecting school-based prevention programs include stressed public school systems, unqualified staff and high staff turnover, insufficient teacher training, limitations in available space, competing needs, and a 200-day school calendar (Benard et al. 1987; Youth Health Service 1994). Community-based prevention efforts are hindered by low awareness or denial that youthful AOD use is a problem, emphasis upon treatment instead of prevention, lack of accessible and affordable youth services, and agency competition for scarce public funds. Further, rural parents and youth may not participate in large formal organizations because they are accustomed to small, informal family, church, and neighborhood groups (Youth Health Service 1994).

Program Evaluation

As the preceding review indicates, very few programs aimed at preventing alcohol and other drug use by rural youth have been evaluated. Results from this small group of studies indicate that program effects on youthful alcohol use have been modest at best. Although more impressive outcomes have been reported for some programs (e.g., Kneidek 1989), inadequate data are provided to support these claims. The evaluation of Project Northland now in progress (Perry et al. 1993) promises to yield important information about alcohol prevention in rural communities, but at present, little is known about the effectiveness of rural prevention efforts.

Many factors have been identified as impediments to evaluation of AOD prevention programs, and these difficulties may be exacerbated in rural areas. Some evaluation challenges are related to program design (e.g., lack of clear objectives and priorities, program complexity, and modifications in objectives, content, and methods as the program is implemented or evolves over time) (Swisher 1990). Timing of outcome evaluation also may be an issue if the program has been in operation too briefly for effects to be observed or if inadequate thought has been given to when effects should become apparent.

Most controversy, however, concerns evaluation methodology. Evaluation experts have identified numerous methodological flaws that compromise assessment of whether prevention efforts reduce youthful AOD use. These technical problems include small samples and inadequate statistical power to detect program effects; biased sample selection; lack of appropriate control or comparison groups; control group contamination; questionable validity and reliability of measures; use of dependent variables such as knowledge and attitudes that are not clearly linked to behavior; reliance on self-report data; lack of pretest, posttest, or long-term followup measures; failure to distinguish between process and outcome evaluations; failure to evaluate program implementation; nonstandardized data-collection techniques; no triangulation of data sources; high attrition rates; inappropriate statistical analyses; failure to examine differential prevention effects on various subgroups; and failure to consider external threats to validity (Bruvold and Rundall 1988; Dielman 1994; Goodstadt 1986; Hansen 1993; Kumpfer 1990; Moskowitz 1989; NIAAA 1994*a;* Tobler 1986).

Some prevention experts consider these criticisms overzealous and counterproductive. Hansen (1993) has observed that the "critical reviewer bias" emphasizes the weaknesses of research to the exclusion of promising alternatives and thus prevents the field from advancing. Asserting that most evaluations of AOD prevention programs report some positive results, Swisher (1990) has chided reviewers of evaluation studies for their limited scope; for ignoring beneficial changes in areas such as delinquency, school dropouts, and discipline; and for highlighting methodological flaws that undermine positive findings. Pointing out that the real purpose of evaluation is to improve programs, but that evaluation often serves only as a means of accepting or rejecting them, Swisher has recommended building on positive results and modifying from that stance until the most effective strategies evolve. These analysts and others (e.g., Klitzner 1993; NIAAA 1994*a*) have emphasized that prevention programs are difficult to evaluate and methodological compromises are necessitated by work in real-world settings.

Comments by those involved in the delivery of rural AOD prevention programs underscore these points. In some cases, obtaining the cooperation of program sponsors and staff with evaluation has been difficult. Project staff may not agree that evaluation is important in a demonstration project and they may be suspicious about its purpose. Rural schools and communities often lack access to evaluation experts, and, even when they are available, local leaders may insist on proceeding without their advice. When such advice is obtained, those responsible for rural programs may refuse to assign any individuals to nonintervention conditions or otherwise to work within the parameters of controlled studies. They also may experience difficulty in developing culturally appropriate evaluation measures, in reconciling sample size requirements with the reality of small populations, and in developing and implementing data-collection and management systems. Restrictions on the percentage of CSAP funds that can be used for evaluation and changes in CSAP evaluation requirements have imposed additional problems (Griffin 1986; Lorion et al. 1992; Rhodes and Jason 1988; Youth Health Service 1994).

In combination, these issues have resulted in an evaluation impasse. Recommendations for improved evaluation of AOD prevention programs are laced throughout the literature spanning two decades, yet little progress has been made. In part this situation reflects the difficulty of designing evaluations that meet rigorous methodological standards but that also respect programmatic and resource constraints. However, at another level, this stalemate appears to result from and contribute to the current definition of the AOD use problem. Data from program evaluations, as well as from research, challenge the social construction of reality and thus are incompatible with ideological approaches to prevention.

CONCLUSIONS AND RECOMMENDATIONS

The scientific basis for preventing alcohol use by rural youth needs to be strengthened. However, because current thinking about youthful AOD use appears to be a product of socially constructed beliefs, simply conducting more research and evaluation studies within the same paradigm is unlikely to produce breakthroughs in knowledge. As Humphreys and Rappaport (1993) have observed:

> . . . [T]he number of research projects being done on substance abuse at this time is unprecedented. Much of this research conforms to the dominant political tone of the times by accepting the claims that have been made about the social problem of substance abuse . . . and thus [perpetuates] the status quo (p. 887).

The recommendations that follow identify policies and research to stimulate and support fresh analyses of alcohol use by rural youth and the development and testing of related prevention approaches in rural communities and regions. In that these proposals build on and, in some cases, repeat the recommendations of investigators and policy analysts cited throughout this chapter, they are consistent with other appraisals of important directions for advancing prevention science. However, they are unique in three respects. First, they frankly challenge current AOD use ideology. Second, they recognize that rural heterogeneity offers an exceptional opportunity to study social factors affecting alcohol use by children, adolescents, and young adults. Third, they acknowledge that both the scarcity of rural resources and the extent to which alcohol use is integrated into the social fabric require increased collaboration with other disciplines and sectors in rural research and prevention programs. Efforts to prevent alcohol use by rural youth therefore can contribute to and benefit from larger initiatives aimed at understanding and revitalizing rural America.

Develop New Partnerships for Research on Alcohol Use by Rural Youth

Concern about the social and economic plight of rural America has stimulated discussion of research and policy initiatives in many sectors. Some of these proposals are relevant to understanding and preventing alcohol use by rural youth, but to date this has not been adequately recognized.

For example, in 1987 a national conference was held to develop a congressionally mandated agenda for health services research in rural areas (McManus and Newacheck 1989; Patton 1989). A number of the issues raised, particularly concerning maternal, child, and adolescent health, are relevant to alcohol use prevention, but this was not noted. Efforts to direct attention to mental health needs of rural America cited OSAP activities (Human and Wasem 1991; Murray and Keller 1991), but did not acknowledge that research on youthful alcohol use is germane to understanding the effects of rural conditions on mental health. Similarly, in identifying research needed to illuminate the role of the family and poverty in the educational attainment of rural youth (Lichter et al. 1993), the importance of studying youthful alcohol use was overlooked.

Another largely unexplored opportunity rests in the fact that in 1992 the Office of Juvenile Justice and Delinquency Prevention (OJJDP) was authorized to support research, training, and program efforts in a number of new priority program areas, including delinquency prevention and treatment in rural areas (OJJDP 1993). Other opportunities for partnerships are defined by widespread interest in the health of America's youth (e.g., Elster et al. 1993). In a comprehensive report on this subject, the Congressional Office of Technology Assessment recognized the need for research examining the relative influence of rural, regional, social class, and ethnic characteristics on the health and well-being of adolescents (U.S. Congress 1991).

Although efforts to prevent alcohol use by rural youth are not yet strongly coordinated with other rural and youth initiatives, the need for broad-based national, State, and local collaboration in rural research and problem-solving is widely recognized (Elliott 1988; Helge 1990; Human and Wasem 1991; Laws 1991; Mick et al. 1993; Murray and Keller 1991, OJJDP 1993; Patton 1989). Discussions of alcohol use prevention programs for Native Americans additionally have emphasized an important principle applicable to all rural populations: People should be active participants in developing, implementing, and evaluating initiatives that affect them (Blum et al. 1992; LeMaster and Connell 1994; May 1986).

These findings support the following recommendations:

- At national, State, and local levels, agencies and investigators concerned with preventing alcohol use by rural youth should interact with agencies and groups concerned with other rural issues and with the health of America's youth in order to identify mutual interests and develop collaborative approaches.
- Legislation supporting rural research and development should encourage multisectorial, multidisciplinary collaboration.
- The Federal Government should provide leadership in fostering collaboration and development of a National perspective on rural issues by providing mechanisms for states and rural communities to share issues, data, and problemsolving, as Murray and Keller (1991) suggested.

Develop Standardized Measures

Understanding alcohol use by rural youth requires more precisely defining both "alcohol use" and "rural." Standardized definitions are needed so data can be compared across time, settings, and populations.

Developing an empirical typology of youthful alcohol use would advance both research and prevention planning by making it possible to identify how specific drinking behaviors are related to particular consequences in various age and gender groups, communities, and cultures (Kilty 1990; Thompson 1989). At a minimum, youthful alcohol use needs to be assessed separately from the use of other drugs (U.S. Congress 1991) and measures of "ever use" should have lower priority than assessments of current drinking. While annual, 30-day, 7-day, and daily use prevalence rates help to monitor trends, experimental drinkers should be distinguished from regular users in analyses of data from research and program evaluations. Dielman (1994) also recommends distinguishing children who use alcohol only under adult supervision from those who drink unsupervised. Information on age of drinking initiation, frequency and quantity of alcohol consumption, and drinking situations (occasion, place, time, day, and season) is needed to understand patterns of drinking by rural youth in different communities and at different ages. Standardized, age-appropriate measures of alcohol effects (e.g., being drunk) and of problems resulting from alcohol use also are needed.

The meaning of rural should be better defined so that youthful drinking rates and the prevalence of alcohol-related problems can be compared by type of rural community (Kelleher et al. 1992; Swaim et al. 1986). Difficulties resulting from inconsistent definitions of "rural" have long been recognized by Federal agencies concerned with data collection and rural issues, but earlier attempts to develop a common typology of rural areas have not succeeded. A resurgence of interest in rural health care delivery has generated new proposals for revising definitions (Braden and Beauregard 1994; Cohen et al. 1993; McManus and Newacheck 1989; Patton 1989). This activity, current efforts to streamline Federal data-collection systems, and multisectorial interest in developing compatible databases mark this as an opportune time for pursuing a more adequate typology of rural areas, specifically as noted below.

- Agencies that fund research and program evaluations concerning alcohol use by rural youth should require that current alcohol use be measured, that experimental and regular drinking be measured separately, distinguished, and that alcohol consumption be distinguished from other forms of substance use.

- The NIAAA should convene a working group to develop recommended measures of youthful alcohol use and its effects. Draft measures should be refined through systematic field testing with youth of differing ages and cultural backgrounds in rural and urban communities. These measures should then be adopted as standards by agencies funding alcohol research and evaluation studies.

- NIAAA, NIDA, CSAP, and other Federal agencies concerned with alcohol use by rural youth should explore ways to support the development of a common system for classifying rural communities. Until such a framework is developed, these agencies, investigators, and prevention specialists should use the typology developed by the National Rural Health Association (1993).[4]

Identify the Problems To Be Prevented

From a public health perspective, behavior is a concern only when it signifies the existence of a problem or itself leads to negative health and social consequences. More precisely identifying the prevalence, severity, and distribution of problems associated with alcohol consumption by rural youth is therefore critical in determining priorities for research and in assuring that important needs are addressed by prevention initiatives. Because the nature and magnitude of alcohol-related problems may differ in different rural communities or regions (Mick et al. 1993), research in diverse rural communities and community comparisons are essential. The following four examples illustrate specific types of research needed.

Rural Problem Clearly Related to Youthful Alcohol Use. Alcohol-related traffic crashes are the leading cause of death and spinal cord injury for youth ages 15 to 24 (DHHS 1991). Recent progress in reducing this cause of death has been least apparent among persons 21 to 24 years of age, and in 1993 this age group recorded the highest intoxication rates (30.7 percent) in fatal crashes (NIAAA 1994*a*; NHTSA 1993*a*). Because as many as two-thirds of all U.S. motor vehicle deaths occur in rural areas (National Safety Council 1988), research is needed to illuminate the conditions associated with crashes involving rural youth and young adults. Particular attention should be devoted to determining whether alcohol-related motor vehicle crash rates in rural areas mirror age and gender differences observed nationally (Fell 1987; NHTSA 1993*a*; Popkin 1991; Zador 1991), and, if so, to explaining the dramatic differences between rates for youth ages 16 to 20 and those 21 to 24 years of age.

Rural Problem Documented but Relationship to Youth Alcohol Use Unknown. The rapidly increasing incidence of AIDS in rural areas (Berry 1993), high rates of human immunodeficiency virus (HIV) infection among youth from the rural Southeast (Durant et al. 1992; St. Louis et al. 1991; Young 1992), and low levels of knowledge and attitudes that protect against HIV among rural adolescents (Boswell et al. 1992; Durant et al. 1992) signal the importance of determining whether rural youth who drink are at increased risk of unsafe sexual practices. Although research on the relationship between alcohol use and sexual activity is in its infancy (NIAAA 1994*a*), some studies have shown that the risk of early sexual intercourse increases with level of alcohol involvement (e.g., Kandel 1990) and that some teenagers are less likely to use condoms in sexual encounters that immediately follow drinking (Hingson et al. 1990; Strunin and Hingson 1992). Such behavior increases risk not only for HIV infection, but also for other sexually transmitted diseases and unwanted pregnancy.

Alcohol Use Known To Increase Risk but Rural Problem Not Documented. Although studies have shown that alcohol use during pregnancy presents considerable risk both to the mother and the fetus (Funkhouser et al. 1992), no studies were found concerning alcohol use by rural pregnant teenagers. This is an important research gap, for 22.7 percent of nonmetropolitan women compared to 16.5 percent of metropolitan women bear their first child by age 18 (Lichter et al. 1993). That alcohol use during pregnancy may be a problem is suggested by research on drinking by teenage parents: 48 percent of rural girls who gave birth before age 18 used alcohol, while the drinking rate for those who gave birth between ages 19 and 21 was 60 percent (Elster et al. 1990).

Rural Problem Not Documented and Relation to Youth Alcohol Use Unknown. Pointing out that the highest rate of homicide for children ages 10 through 14 is in New Mexico, not Washington, DC, Johnson (1993) expressed concern that a national forum on violence failed to acknowledge the need for violence-prevention efforts in rural areas. However, the prevalence of youth violence has not been documented in rural communities and the relationship of violent behavior to alcohol use is not well understood (NIAAA 1994*a*). Although alcohol use is rarely the sole cause of violent behavior and the majority of drinkers, even heavy drinkers, never engage in violence (NIAAA 1994*a*), alcohol use by adults, especially young males, appears to be involved in a high proportion of sexual and nonsexual assaults, gun fights, homicides, suicides, and robberies (Collins and Messerschmidt 1993). Because data on alcohol use and violence among noninstitutionalized adolescents are generally scarce (White et al. 1993), studying this issue in rural environments would advance understanding about a problem of national concern. Moreover, without data, rural needs may be neglected.

The following recommendations can be made:

- Research should be conducted to establish the prevalence and distribution of problems related to alcohol use by youth in rural communities and regions.
- Health objectives for the nation should accord high priority to the prevention of alcohol-related motor vehicle crashes involving rural adolescents and young adults.[5]

Study the Epidemiology, Etiology, and Ecology of Problem Occurrence

Designing effective prevention approaches requires understanding how a problem develops, identifying the key causes of trouble, and determining where the destructive chain of events can best be interrupted. Because the causes of youthful alcohol use and alcohol-related problems are extremely complex and intertangled and because multiple etiologies may be involved, the research task can seem overwhelming. However, because of their number, size, and heterogeneity, rural communities are uniquely suited to research on how patterns of youthful drinking interact with other factors to cause alcohol-related problems.

Both patterns of alcohol use and problem occurrence vary with age, gender, and race/ethnicity; these variables thus should be considered in research design and data analysis. Selecting other variables for study from the myriad potential influences on youthful drinking and the development of alcohol-related problems requires thoughtful consideration. Possible selection criteria include observations, analyses, hypotheses, or theoretical models indicating a variable is important; a lack of previous research testing the proposed relationship or inconclusive results from previous studies; and potential to modify the variable through preventive intervention.

The new knowledge to be gained from repeated study of established relationships should be carefully assessed; however, some replications are needed to determine whether the factors associated with a problem in urban areas or particular rural settings are important across rural populations and communities. Because factors related to youthful drinking and its consequences may differ in different populations, the generalizability of research conducted in particular settings cannot be assumed (Kelleher et al. 1992; May 1989; Napier et al. 1981; NIAAA 1994*a*). For this reason, rural communities should be studied independently, but with methods and measures that permit cross-community comparisons.

Determine Patterns of Youthful Drinking Related to Problem Occurrence. Specific patterns of youthful alcohol use associated with specific negative outcomes in rural areas should be identified. These patterns may be distinguished both by studying drinking behaviors related to particular problems and by assessing the number and types of problems experienced by youth who differ in frequency and amount of alcohol consumption. Identifying consequences of heavy drinking among rural adolescent males and young adults should be a high priority, as should the study of alcohol use and alcohol-related problems among rural school dropouts.

Limited rural data and studies in urban areas suggest that fewer than 20 percent of youth who drink experience multiple health and social problems. These youth appear to exhibit problem behaviors at an early age before drinking is initiated (Shedler and Block 1990); however, they also may be among the first in their peer group to experiment with alcohol use, and the frequency and amount of their alcohol consumption may increase as development progresses. On the other hand, Dielman (1994) has demonstrated that by grade six about 80 percent of youngsters have no experience or only supervised experience with alcohol, and that these youth are unlikely to become involved in alcohol misuse in later grades. Research is needed to determine whether these findings apply to rural youth. Studies also are needed to assess whether experimental, light, and moderate drinking by rural youth results in trouble, and if so, to identify the nature and frequency of negative events.

More attention to transitions in the drinking behavior of rural youth and the time lags involved could provide important information for the design of prevention programs. For instance, youngsters who move quickly from the first taste of alcohol to unsupervised experimental drinking and then to regular drinking may be at greater risk for alcohol abuse and alcohol-related problems than youth who initiate regular drinking more gradually.

Study Individual, Family, and Peer Influences on Youthful Alcohol Use and Alcohol-Related Problems. Shedler and Block (1990) have identified the psychological triad of alienation, impulsivity, and distress as a distinct personality syndrome related to frequent adolescent drug use, with poor quality of maternal parenting as a key causal factor. Although these investigators studied urban youth, the Iowa Youth and Families Project also found a relationship between parenting difficulties and anti-social behaviors of rural adolescents, including alcohol use by seventh graders (Conger et al. 1991; Conger and Elder 1994). These personality traits and family factors merit further investigation in studies of rural youth.

Peer influences on drinking by rural youth also should be studied further. Although many dimensions of peer relationships have been correlated with youth alcohol use, the dynamics of peer influence on drinking are still poorly understood. Examining the characteristics of youth involved in different types of peer groups and the participation of these groups in various drinking activities may provide critical clues for prevention. Additional research on the role of older youth in initiating young teenagers to drinking and in supplying them with alcohol is very important (Wagenaar et al. 1993), for this is potent socialization.

Binion and colleagues (1988) have advised that alcohol use prevention programs need to take into account the complexity and interrelatedness of the user's rationales. Steinberg's (1991) recommendation that young people be differentiated by whether they use substances in response to stress or to the social mores of their age group thus appears highly relevant to research on alcohol use by rural youth. Moreover, as Thombs and associates (1994) have shown, identifying motivational and situational variables related to teenage drinking can help to distinguish subgroups of rural youth at risk for different types of negative outcomes. The preceding literature review suggests that the desire to have fun with peers and to relieve boredom may be powerful motives for youthful alcohol use in rural areas. Further study of the situations in which rural youth drink, their expectancies related to alcohol consumption, and their own explanations for drinking promises to be fruitful.

Additional research on ways that rural youth use their time also is likely to be productive (Gibbons et al. 1986*b*). Alexander and colleagues (1992) have pointed out the importance of studying frequent cruising in cars and trucks and multiple types of risk-taking behavior, noting that such activities are related both to substance use and the risk of teenage injuries. Rural youth have a higher rate of accidental injuries than their urban counterparts (U.S. Congress 1991), and rural youth who work are at increased risk of injuries (Alexander et al. 1992), but research is needed to determine whether youthful alcohol use is implicated in these relationships. Similarly, research should be conducted on the relationship between alcohol use by young people in rural areas and the time that they spend on school work, their educational achievement and aspirations, and the extent to which they believe they can control their future.

Identify Socioenvironmental Factors Related to Youthful Drinking and Problem Occurrence. Rural communities offer a unique opportunity to study relationships between youthful alcohol use and individual, peer, and family variables in the larger social context. Perry and associates (1993) are setting the pace by surveying students, parents, merchants, and community leaders in order to compare normative expectations about underage drinking, as well as to guide the design and evaluation of Project Northland prevention strategies. Additional research should determine whether the values expressed in such surveys are consistent with informal interactions concerning the acceptability and tolerance of drinking by rural youth. Relationships between attitudes toward youth alcohol use and adult drinking practices also should be studied. Because these variables are major sources of social influence, investigating their relationship to the drinking practices of rural youth will help to advance both theory and the design of rural prevention programs.

Further research is needed to identify community characteristics associated with variations in youthful drinking practices. Kumpfer (1989) has cited unpublished research by Coate and Grossman suggesting that a community's "drinking sentiment" and religious composition are major determinants of alcohol consumption. As local norms and values also are expressed in the availability of alcohol to youth and in the adoption and enforcement of laws and policies to control youthful drinking (Funkhouser et al. 1992), these variables, too, should be studied in rural communities and compared to the alcohol-related attitudes and behaviors of young people, their parents, and other adults who live there. The packaging, pricing, and advertising of alcoholic beverages in rural communities, as well as the geographic distance to outlets where alcohol is sold to minors, also may reflect local norms (Lorion et al. 1991), but the extent to which these variables are controlled by external groups needs to be determined.

Moskowitz (1989) and Kumpfer (1989) have observed that each community has its own informal social control system that generates normative influences pertaining to drinking and drinking-related behaviors. They have proposed that formal controls are needed only when these "cultural recipes" break down, but that even then, the effectiveness of policies and regulations depends on congruence with informal controls and adequate communication. These concepts suggest important directions for research in rural areas. To identify potential points for intervention, etiological studies are needed to ascertain what natural mechanisms control drinking behaviors by youth in different physical and social settings, as well as to determine why these mechanisms deteriorate (Moskowitz 1989).

Studying differences in the social organization of rural communities may be critical in understanding normative influences on youthful alcohol use as well as community capacity to mount prevention programs. Degree of community integration is likely to be a key factor in determining whether subgroups of youth are subject to different social influences. Rural communities are not necessarily cooperative and homogeneous, for socioeconomic differences can separate business and farm owners from laborers, oldtimers may not welcome newcomers, and former disagreements can be a source of ongoing animosity. Prejudice and discrimination can thrive. Resulting social distinctions may be related to subgroup differences in youthful drinking, and indeed, different patterns of drinking may socially symbolize subgroup membership (Douglas 1987). Important questions for research therefore are whether patterns of alcohol use by rural youth vary with characteristics of community subgroups, subgroup identification, and the relationships of subgroups to each other. Another significant research issue is how the social organization of rural communities affects support for and collaboration in efforts to prevent youthful drinking.

Many other ecologic variables may be related to youthful alcohol use and the occurrence of alcohol-related problems. Relationships therefore should be explored between these variables and community size, population density, and U.S. region; the distribution of the population by age, education, income, and race/ethnicity; attributes of schools, government agencies, community services, and business; employment rates; occupational structure; job opportunities for youth; distance from an urban center; and topographic features, especially as these affect face-to-face interactions, transportation, and electronic communication. The profound changes affecting many rural communities should be studied as natural, if harsh, experiments (Howard et al. 1994; Kumpfer 1989) to test the effects of macro forces such as in- and out-migration, shifting economic conditions, and increasing ties to urban centers on youthful alcohol use and the sequelae of underage drinking.

Multiple Contributing Factors. Factors other than youth alcohol use potentially contributing to a problem should not be overlooked. Multidisciplinary involvement in problem analysis can help to avoid a narrow focus on drinking as the sole causal factor. Briefly examining elements that may be involved in alcohol-related motor vehicle crashes involving rural youth illustrates that prevention may need to address a broad range of issues.

Findings that binge drinking and heavy drinking are more common among rural than urban youth (Johnston et al. 1993, 1994; SAMHSA 1993*b*, 1994) probably translate into the rural culture of Saturday night in town—or at the lake, the roadhouse, or simply off in the fields or the woods with a bunch of friends and a supply of beer. Regardless of the site for heavy drinking, the return home places youth at extremely high risk for motor vehicle crashes. Young males are less likely than other drivers to wear seatbelts at night, and seatbelt use also appears less common in nonmetropolitan areas (Foss et al. 1994). The risk of a crash increases with the number of miles driven (DHHS 1991), yet distance is a basic fact of rural life.

Moreover, rural roads invite speeding, a fundamental factor in the physical forces involved in crashes (McCarthy 1993; DHHS 1991). Teenage traffic deaths increased sharply in States that raised rural interstate highway speed limits (Baum et al. 1990). However, in Indiana, these higher speed limits diverted traffic so that increased traffic fatalities occurred on country roads (McCarthy 1993). At night, sparsely traveled roads that cut through wide-open spaces can inspire alcohol-induced games of "chicken." Other hazards are presented by roads that wind through mountains, around bodies of water, and over narrow bridges. Poor road maintenance and lack of guardrails add to the danger (Baker et al. 1987), as do animal crossings. A horse or a deer can leap onto the road so suddenly that even an unimpaired driver traveling at a reasonable speed is at risk of collision. The potential for tragedy is heightened when a drinking youthful driver is operating an old vehicle with worn tires and brakes or when friends are loaded into the open bed of a truck or pickup.

When a crash occurs, help may be a long time coming and neither transportation to the nearest hospital nor staff available there may be sufficient to provide proper emergency care to all victims. Solo country doctors tell horror stories about trying to assist six or seven teenagers injured on rural roads in weekend motor vehicle crashes. However, these communities at least have medical care. In 1990, 126 U.S. communities of fewer than 50,000 people had no doctor at all (Weisfeld 1993).

Research is needed to explain the finding that alcohol involvement in nonoccupant (pedestrian) fatal crashes is higher in rural than urban areas (Centers for Disease Control and Prevention (CDC) 1994; NHTSA 1993*b*). Because most of these fatalities happen on major streets or highways with posted speed limits of 55 miles per hour or higher, they may be related to increased traffic speed or to the location of establishments that serve or sell alcoholic beverages along high-speed roadways with few barriers or sidewalks. Again, the data point to the need for research and prevention efforts focusing on young adults, for the greatest percentage of intoxicated pedestrian deaths occurs in the 21- to 34-year-old age group (CDC 1994).

Develop Etiologic Models. As studies identify factors related to particular patterns of youthful drinking and particular alcohol-related problems in specific rural communities, their fit with existing etiologic models should be examined. Where results do not support hypothesized relationships or account for observed results, models should be adjusted or new etiologic frameworks should be proposed and tested. Because multiple negative outcomes may be associated with drinking by rural youth and because drinking patterns and other factors related to these outcomes may vary, a number of etiologic models may be needed, even in the same community. The formulation of alternative etiologic frameworks is consistent with researchers' conclusion that no single pathway is likely to explain and predict youthful drinking and the development of alcohol-related problems (Boyd et al. 1994). As with the theoretical model used in the Iowa Youth and Families Project (Conger and Elder 1994), models of youthful drinking should focus not only on individual, family, or peer variables, but should also include community and ecological variables characterizing rural environments. The need for more comprehensive rural models has been widely recognized (Alexander et al. 1992; Kelleher et al. 1992; Lichter et al. 1993; Moncher et al. 1990; Napier et al. 1981; OSAP 1990; U.S. Congress 1991).

Test Relationships Across Diverse Rural Communities. Comparing research findings and related etiologic models across rural communities and regions has considerable potential to advance theoretical understanding of youthful alcohol use and its consequences. The replication of relationships in diverse rural populations will help to identify drinking patterns and other phenomena that are consistently related to particular health and social problems. Results also will help to assess the relative importance of these factors in increasing risk and to determine the distribution of risk in rural areas. Conversely, failure to replicate relationships in diverse rural communities will direct research attention to variables that, if added to the etiologic equation, might help to explain idiosyncratic findings.

Holding variables constant or systematically varying them in selected community comparisons also will permit addressing unanswered research questions, empirically testing common assumptions, and developing and testing specific hypotheses concerning factors that predict youthful alcohol use and the occurrence of alcohol-related problems. For example, the vulnerability of youth to alcohol use is widely presumed to increase at the time they make the transition from elementary to middle or junior high (Dielman 1994; Steinberg 1991). Because rural districts vary in the grade level at which this transition occurs, as well as in school organization, changes in students' alcohol use rates could be compared under different conditions, (e.g., moving to the 7th grade in the same K to 12 building, moving to a 7 to 12 or a 7 to 9 building in the same community, or being bused to a 7 to 12 or a 7 to 9 building in a different community). If alcohol use prevalence increases regardless of differences in school organization and locale, changes in students' social identity and status may be a critical cause of drinking during school transitions. On the other hand, if increases in alcohol use prevalence vary by condition, school variables and changes in the peer group would merit further investigation.

Comparative longitudinal and ethnographic research in rural communities has great potential to reveal how individual, family, peer, and community risk and protective factors interact over time to influence patterns of youthful drinking and the occurrence of alcohol-related problems. Similarly, such studies would provide insight into how risk and protective factors change with adolescent and community development or with the emergence or amelioration of individual, family, peer, or community problems. Such research eventually may permit development and testing of a theoretically based, empirically grounded risk-assessment model for communities, as well as for individuals and subgroups of youth defined by age, gender, race/ethnicity, or other characteristics.

To address these issues, funding agencies should:

- Support research to identify how patterns of youthful alcohol use and other factors are related to specific health and social problems experienced by youth living in diverse rural communities. Identifying consequences of heavy drinking among rural adolescent males and young adults should be a high priority.

- Prevention policy and research should recognize that different factors or combinations of factors, including different patterns of drinking, may be related to different consequences of youthful alcohol use; that causal factors may differ by age, gender, race/ethnicity, community characteristics, and other variables; and that different etiologic models therefore are needed.

- Funding agencies should support research to identify community as well as individual and family factors that influence youthful drinking and the occurrence of alcohol-related problems.

Study Current Prevention Programs and Policies

Despite the tensions that have developed around the evaluation of AOD use programs, rural prevention efforts do need to be evaluated for a number of reasons (Goplerud 1991; Kumpfer 1990). Those who have invested their time, talent, funds, and other resources in a program deserve to know the extent to which it is achieving its stated purpose and whether it has unintended side effects. Such accountability may be required to justify continuing costs to Congress, State legislatures, and funding sources. Outcome and impact evaluations also are needed to establish realistic expectations about what rural prevention programs can accomplish and to identify effective programs that should be continued, expanded, and disseminated. On the other hand, evaluation results showing that a program is having no or negative effects alert decision-makers that modifications are needed, that an alternative approach should be tried, or that resources might be better used in other ways.

Expanding the range of outcomes examined in evaluations of rural AOD use prevention programs would relieve a major source of resistance to such studies, while also enhancing their scientific value. As Dielman

(1994) has pointed out, exclusive reliance on any use of alcohol as the outcome of interest can obscure important program effects. Moreover, focusing on AOD use prevalence as the dominant indicator of program success does not adequately inform prevention policy (Reuter and Caulkins 1995). Multiple behavioral, social, and health endpoints therefore should be considered as legitimate focuses for evaluation (Perry 1986). The outcomes examined in specific evaluation studies should be determined not only by program objectives and rationale, but also by local community interests and expectations. Because program effects may differ for youth with differing levels of alcohol use at baseline, analyses should establish whether this is the case (Dielman 1994; Reuter and Caulkins 1995). Comparing outcomes of prevention programs implemented in different rural schools and communities may help to identify other factors mediating program effects.

Process evaluations and operations research also should be conducted to reveal whether a program is working as intended, as well as to determine how abstract concepts have been translated into practice, to identify effective models of program planning and implementation, and to uncover issues needing attention (e.g., Fox et al. 1988; Perry 1986; Tricker and Davis 1988). When programs are not ready for outcome evaluation (Dielman 1994), such studies can be a productive intermediate step. If their scope is broadened to consider the context in which existing AOD use prevention programs operate, process evaluations also can reveal a great deal about the nature of rural schools and communities, help to determine the extent to which particular prevention approaches are feasible in various types of rural settings, and identify the amount and type of technical assistance and other support required to make them successful. The following examples illustrate this vision and its potential.

Study Planning Processes. Assessing the processes of prevention planning can illuminate patterns of local leadership and relationships as well as the roots of concern about youthful AOD use in rural communities. Such research should identify the events that triggered planning, the persons and organizations that took the lead, and others who became involved in the planning effort. Examining the extent to which needs assessment was conducted, the methods used, the information collected, and how it was applied can provide important insight into the quality of local data and decisionmaking processes. Documenting planning assumptions and factors considered in developing prevention strategies also can elucidate local knowledge and beliefs about youthful AOD use, the acceptability of various prevention approaches in rural communities of differing characteristics, and logistic constraints limiting planning options.

Refine Principles of Prevention. Given the lack of evaluation, several investigators have examined promising programs (e.g., Goplerud 1991; Kumpfer 1990) or drawn on theory and other experience (e.g., Griffin 1986; Wittman 1984) to identify principles that should guide prevention efforts. For example, coordination with all sectors of the community, as well as with larger jurisdictions and national organizations, has been identified as an essential ingredient of program success. Coordination has been recommended with a staggering list of entities including student groups, families, parent associations, schools, religious institutions, government agencies, grassroots groups, legal systems, voluntary and service organizations, media, business, labor, health and human service professionals, law enforcement, alcoholic beverage industries, and the research community. The extent to which such coordination is feasible in rural areas has not been tested.

Studies of group and organizational participation in rural prevention programs therefore are needed to assess the degree to which coordination has been achieved and the outcomes of collaboration. Identifying the particular contributions of participating agencies and groups, mechanisms through which their involvement is coordinated, and barriers to collaboration would enlarge understanding of the potential for multi-sectorial involvement in rural prevention programs and ways this can be accomplished (Murray and Keller 1991; Youth Health Service 1994). Examining the roles various organizations have played in different rural communities could facilitate negotiation of new commitments. At the same time, such studies would provide insight into the resource structure of rural communities. Outcome studies should help to shed light on the types of coordination that are most critical.

Another frequently cited principle of prevention is that programs should be adapted to different cultures (e.g., Blum et al. 1992; Goplerud 1991; May 1989; Moncher et al. 1990; Skager et al. 1990). Program developers and staff are urged to be sensitive to ethnocultural values, beliefs, practices, traditions, and social environments, as well as to differences in reasons for drinking; the cultural meanings, values, and functions attached to alcohol use; and the mechanisms through which youth drinking patterns develop. They also have been advised to avoid cultural stereotyping (Oetting et al. 1989), to develop bicultural competence in youth (Binion et al. 1988), and to address acculturation issues with sensitivity (Moncher et al. 1990). This is a tall order, but relatively little guidance is available for filling it in rural areas, and that is limited to Native American populations. Research on ways that programs have adapted to rural cultures and the success of these efforts would provide important information for prevention planning, as would studies of discrepancies between rural values and those espoused by programs imported from urban settings.

Study Rural Prevention Resources and Their Utilization. The capacity of rural schools and communities to prevent youthful alcohol use and alcohol-related problems depends on the resources available and how these are utilized. The survey of rural districts conducted by the GAO (1992*b*) provided some descriptive information about funding sources for school-based AOD use prevention programs, but the contributions of volunteers and in-kind donations from schools and other agencies were not assessed. No published data are available on the extent to which rural schools and communities are familiar with and use State and National resources for AOD use prevention (e.g., CSAP 1993*a*; National School Boards Association 1988; National Rural Health Association 1993; OSAP 1991) or on how rural users evaluate the resources provided.

Research therefore is needed to assess what resources are being used in rural prevention programs and to determine how these resources are organized and brought to bear on the problem. Because programs can have greater per-client costs in rural than in urban areas because of their "diseconomies of scale" (Wargo et al. 1990), and because the median amount of Federal drug education grants to rural districts is not sufficient to pay even one half-time salary, particular attention should be devoted to how well rural prevention plans are matched to resource availability, what can feasibly be accomplished with limited resources in different settings, and whether this scope of activity is likely to have a prevention effect. Issues related to program implementation should be studied in this context, for the availability and deployment of resources fundamentally affect the recruitment, training, supervision, and retention of staff; the strength of program leadership and management; the extent of program coordination and networking; and options for solving problems of program delivery in sparsely populated rural areas.

Other issues that merit investigation include the success of efforts to develop local resources, the effects of multiple funding sources on program integration, and the extent to which rural prevention programs are dependent on external resources. Results will contribute to answering the larger policy question posed by Murray and Keller (1991): Are rural Americans becoming a new underclass that lacks the resources to manage its problems? If so, more comprehensive rural prevention strategies will be needed.

Study Policies To Control Alcohol Use by Rural Youth. Given the dearth of information about policies to control youthful alcohol use in rural areas, surveys are needed to ascertain what school and community policies are in place; the extent to which local, State, and national policies are enforced; and what penalties are imposed on rural minors when they are caught drinking. The relationships of these variables to patterns of youthful alcohol use and the prevalence of alcohol-related problems should be studied to assess the extent to which raising the legal drinking age and other policies have decreased or possibly increased drinking and heavy drinking among rural youth and young adults, especially those in the 18- to 21-year-old age group. Exploring whether underage drinkers in different policy environments consider themselves lawbreakers or believe that they can get away with breaking the law would further contribute to policy evaluation.

Defining characteristics of rural communities associated with different levels of alcohol control policies and policy enforcement would help to determine which policy approaches are most likely to be acceptable and effective in particular areas. For example, the following hypotheses generated from analyses by Giesbrecht and Pranovi (1986), Moskowitz (1989), and Kumpfer (1989) might be tested: (1) adoption and enforcement of policies to control youthful alcohol use will be weak in communities where youthful drinking does not violate normative standards; (2) community support for prevention programs, alcohol-related policies, and policy enforcement will vary inversely with the strength of informal social mechanisms to control youthful alcohol use; and (3) when the goals of alcohol use prevention programs and policies are not congruent with community norms about youthful drinking, these programs and policies will have little effect on patterns of youthful drinking.

If these hypotheses should be supported, then the research question for prevention is whether social norms can be changed in communities with a high tolerance of youthful drinking. By testing a multifaceted approach, the experiment now being conducted by Project Northland will provide important data on this issue (Perry et al. 1993). The cost-effectiveness of communitywide interventions in changing the behavior of youth most at risk for alcohol abuse and alcohol-related problems merits close attention. And, as discussed below, other approaches for preventing alcohol use by rural youth also should be tested.

Key recommendations are that:

- Funding agencies should support research to study and evaluate the planning, implementation, acceptability, feasibility, and effectiveness of existing programs to prevent alcohol use by rural youth.
- Evaluations of rural alcohol use prevention programs should examine multiple endpoints and not solely the prevalence of youthful drinking. These evaluations should recognize that program effects may differ by individual and community characteristics, including baseline levels of alcohol use.
- Alcohol control policies in rural areas should be evaluated with particular attention to the effects of existing policies on alcohol use and alcohol-related problems among adolescents and young adults. Research should be conducted on the characteristics of rural communities associated with differing levels of alcohol control policies and policy enforcement.

Design and Evaluate New Prevention Approaches

As rural communities and those who work with them identify alcohol-related problems that are not being effectively prevented, new or modified approaches should be developed, implemented, and evaluated. Because each problem is likely to have a different etiology, a single problem definition probably will be inadequate to guide the development of prevention policies, programs, and research. Instead, different preventive approaches are likely to be needed, each with its own set of related goals, objectives, and methods. Although these initiatives should be informed by advances in etiological understanding and problem analyses in specific rural communities and regions, the following recommendations are likely to be broadly applicable.

Identify and Treat Symptomatic Drinking. Children who drink alcoholic beverages without adult supervision and adolescents who engage in compulsive drinking appear to be at high risk for alcohol abuse and alcoholism, as well as many other problems. These patterns of drinking appear to be symptomatic of personality and family problems that also manifest themselves in other antisocial behaviors. Since youth whose drink symptomatically are a subset, albeit possibly a sizable one, of all youth in the community, these young people should not be treated through generalized prevention approaches (Dryfoos 1990). Efforts to prevent symptomatic drinking would not be appropriate. Rather, emphasis should be on early case-finding and treatment of the underlying causes that give rise to problem behavior. Individual and family therapeutic approaches may well be indicated (e.g., Binion et al. 1988), but special help with schoolwork, activities to develop skills and self-confidence, and other complementary approaches also may be needed. Outcomes should include improved individual and family functioning as evidenced not only by reduced alcohol use rates but also by gains in other areas.

Perry (1986) would accord lower priority to these secondary prevention approaches than to primary prevention because they imply policing behaviors, indicators of high risk are not perfect, and the effectiveness of intervention programs is not proven. However, these weaknesses should be addressed through research. Studies are needed to improve case-finding and referral methods in rural communities where both confidentiality and service availability may be a problem. The development of community-based techniques for identifying and serving adolescent alcohol abusers who are frequently absent from school or who have dropped out should be a high priority (Tobler 1992). Possibilities for detecting and treating youth with behavioral problems through rural health care providers may be especially promising (Sarvela and McClendon 1987*b*), particularly as managed care plans are extended to rural communities. Irwin and associates (1994) have made a number of recommendations relevant to pursuing these possibilities. Both the short- and long-term effects of intervention and of singling out rural children and adolescents for referral or special treatment should be evaluated.

Reduce Risks Related to Normative Drinking. Youth who drink with their age group in accord with local social patterns but who do not drink compulsively or exhibit other problem behaviors appear to be at low risk for alcohol abuse and chronic alcohol-related problems. However, because alcohol use reduces inhibitions and impairs judgment, even experimental or light drinkers may engage in risky behaviors that threaten their health and well-being. Because these behaviors are developmentally related, school-based programs provide one promising avenue for their prevention. Skill-building curriculums based on the social influences model that have been shown to delay the onset of alcohol use among young urban and suburban adolescents should be tested in rural settings. As soon as results are available, CSAP and other agencies that provide drug prevention funds should strongly encourage the use of tested classroom programs at recommended grade levels. Incentives should be provided to promote teacher training in the selected curriculum and to ensure that it is taught in its entirely without omitting lessons.

High priority should be given to designing, implementing, and evaluating programs aimed at preventing alcohol use that leads to other risk-taking by rural high school students, especially in areas with a high prevalence of particular alcohol-related problems. Given changing gender roles during adolescence, the effectiveness of programs designed specifically for girls or boys should be explored. Research is urgently needed to develop and test prevention programs for older adolescent and young adult males who engage in heavy drinking (Gibbons et al. 1986*a*). These initiatives should aim to reduce not only the risk of alcohol-related problems for these drinkers, but also to attenuate or convert the influence that they have as drinking role models for younger teenagers. Another research priority is the development and testing of preventive interventions for rural youth of all ages who, as members of ethnic minority groups, drink either in accord with the norms of their own culture or with those of youth in the larger community.

The goals and objectives of these risk-reduction programs should identify problem-specific behaviors to be prevented (Thombs et al. 1994), such as driving after drinking or engaging in unprotected sexual intercourse. Objectives should encompass the prevention of alcohol misuse as well as use so that subgroups of youth who drink according to differing norms can set realistic limits for their own behavior (Dielman 1994; Engs and Fors 1988). Thus while some youth will embrace the goal of abstinence from drinking, others might commit to avoiding overindulgence, losing control due to intoxication, or suffering specific social consequences (Griffin 1986). Engs and Fors (1988) have cautioned that the goal of "responsible drinking" can have many meanings, so the term needs to be translated into concrete behavioral objectives. Multiple options for avoiding risk should be identified and youth should be provided with skill practice not only in making decisions about alcohol use, but also in identifying, avoiding, and managing risky situations. For example, youth should recognize that they can reduce the risk of being involved in an alcohol-related motor vehicle crash by not drinking at all, by not driving after drinking, by refusing to ride with a drinking driver, by designating a driver who does not drink, or by signing a contract with parents to guarantee a ride home if needed.

Such problem-oriented curriculums should be complemented by activities in the school and the community that also are aimed at reducing the risk of alcohol-related problems. These could include many current approaches such as alcohol-free social events, developing peer leadership, and adopting stricter alcohol control policies. In addition, other precursors to problem occurrence should be modified (i.e., improving road conditions, lighting, and signage would help to prevent alcohol-related motor vehicle crashes, as would enforcing speed limits and seatbelt laws). Assumptions about the etiology of the problem and the way that school- and community-based activities are expected to change risk factors should be clearly identified (Kumpfer 1990) and tested. Process evaluations also should identify both effective and ineffective methods of program implementation. Results should be combined with outcome evaluations to examine strengths and weaknesses in overall program logic.

Promote the Healthy Development of Rural Youth, Families, and Communities. By supporting research on factors that protect youth against alcohol use and the development of programs that increase the competencies of individuals, families, and communities, the field of alcohol use prevention has recognized that health promotion is relevant to its objectives. Policy should make that recognition explicit. Moreover, as others have recommended, alcohol use research and prevention demonstrations should be incorporated within broader efforts to promote the healthy development of children and adolescents (Griffin 1986; Schaps and Battistich 1991).

Alcohol use prevention policy should also strongly support the development of healthy communities. Thus Blum and colleagues (1992) have pointed out that health promotion efforts for Native American and Alaska Native youth should be nested in a community development context that builds on the strengths of community identity and culture, promotes role models of accomplishment, and taps the exuberance, inherent optimism, and resilience of young people themselves. In discussing the implications of their quite different research on rural economic hardship, Conger and associates (1994) observed that from a policy perspective, the most fundamental means for reducing economic pressure and its adverse influences on adolescents and parents is to increase family economic well-being. Analyzing problems of physician shortages in rural areas led to a similar conclusion. According to Robert

Van Hook, former executive director of the National Rural Health Association:

> We've got to develop rural America. We have to find a way to bring about some sort of renaissance in rural America so there are good schools, access to health care, and true economic development (Weisfeld 1993, p. 59).

Community development projects may help to curtail youthful drinking by providing new opportunities for recreation and social interaction in alcohol-free environments. However, actively engaging youth in the community development process may be a much more effective way of channeling their excess leisure time. Children, adolescents, and young adults can contribute to problem analysis, offer ideas for projects, and participate in activities to achieve community goals. Such involvement provides young people with meaningful social roles; builds their skills; provides ongoing and frequent opportunities for positive social and affective experiences; fosters cooperation; teaches the identification, development, and use of resources; promotes bonding with the community and its institutions; and builds young people's confidence in their capacity to help make life better.

Community development also responds to other recommendations for preventing alcohol use by youth (e.g., Binion et al. 1988; NIAAA 1994*a*). It is a multifaceted, coordinated approach that requires the combined efforts of families, schools, churches, social agencies, and other community institutions and groups. It provides alternative ways for youth to deal with personal and family problems as well as with feelings of boredom, unhappiness, worry, and nervousness. It is a positive and potent intervention that offers experiences to compete with the positive affective states associated with alcohol use. And it addresses risk factors in belief systems, social relationships, and the environment simultaneously.

While the potential of individual, family, and community health promotion for alcohol use prevention is clear, policy implications are clouded. Support has long been easier to obtain for categorical programs than for comprehensive initiatives promoting the public's health and welfare. Thus while current Federal and State policies may restrict the ability of administrators and practitioners to work with rural communities broadly (Murray and Keller 1991), recommendations for a shift in emphasis may deepen cuts for prevention and treatment without increasing funds for health promotion. The current policy climate underscores the need for multisectorial collaboration in rural problem-solving and policy development.

To address these issues:

- Federal and State policies aimed at rural alcohol use prevention should support research and prevention programs with a broader range of goals than youth abstinence from alcohol use.
- Agencies, investigators, and practitioners engaged in the prevention of youthful alcohol use and related research should explore possibilities for working with partners from other sectors to promote the healthy development of rural youth, families, and communities, and to share funding for these initiatives.
- Federal and State policies should support comprehensive approaches to improving rural health and welfare.

Use Multiple Research Methods

Research in rural areas presents many methodological challenges; thus, a variety of quantitative and qualitative approaches should be employed to circumvent obstacles. Moreover, since each research method is associated with both strengths and limitations, using diverse data-collection and analytic techniques will enrich understanding. Reaching the same or similar conclusions through alternative methodologic pathways also helps to validate findings.

If prevention resources are to be targeted to rural areas where they are most needed, locales with a high prevalence of youthful alcohol use and alcohol-related problems need to be identified. This might be accomplished by oversampling rural communities and regions in existing national surveys. "Hot spots" for alcohol use by rural youth also might be identified through closer analyses of school AOD use surveys conducted by States. Information routinely collected by rural schools, health care providers, law enforcement agencies, and other sources also could be analyzed, and perhaps consolidated and mapped. Stories in rural newspapers can provide important information about alcohol-related problems and community concerns. CSAP grant applications and project reports from rural schools and communities also are likely to contain data and observations relevant to surveillance. These and other sources of data should be examined so that rural surveillance systems can be developed to detect emerging problems, pinpoint geographic areas where prevention is most needed, and help to assess how both planned prevention initiatives and unplanned social change affect problem occurrence.

Research on the epidemiology and etiology of alcohol use by rural youth and the consequences of drinking behaviors should include not only quantitative approaches, but also ethnography, archival studies, observations, and other qualitative techniques. Individual and group interviews with rural youth, parents, teachers, health and social service personnel, county extension agents, police officers, sheriffs, religious leaders, local business people, oldtimers, and other key informants can provide insight into youthful drinking practices and their relationship to local norms. Douglas (1987) has observed that anthropological methods for comparing community structure would be eminently practicable for comparative studies of alcohol use. Alexander and colleagues (1992) have recommended process analysis (Peterson et al. 1987) to study environmental and behavioral precursors and consequences of both injuries and near injuries. These approaches, case studies, case-control epidemiological investigations, and cross-sectional surveys can help to analyze problems, generate hypotheses, suggest the relative importance of different variables, and identify potentially effective approaches to prevention. Longitudinal research, preferably involving successive cohorts of youth, is important in establishing causal relationships (e.g., Bloch et al. 1991; Boyd et al. 1994; U.S. Congress 1991).

More comparative research is needed to illuminate the heterogeneity of rural communities. Thus investigator-initiated research comparing youthful alcohol use in different communities should be solicited. NIAAA, NIDA, and other funding agencies also should foster exchange and collaborative problemsolving among rural researchers through conferences, newsletters, cooperative agreements, and other mechanisms. More analytical and integrative analyses should be conducted across existing data sets to address drug policy issues (Aday 1993). Techniques such as using common core questions also should be employed to validate data and to determine the extent of overlap in sampling frames (Aday 1993). In addition, funding agencies should consider collaborating on indepth case studies or periodic surveys of a jointly selected sample of rural communities stratified by size, proximity to urban areas, variations in alcohol use rates, and economic condition.

Creativity and more flexibility are needed in developing workable and methodologically solid approaches to program evaluation in rural areas. Evaluation should be structured, not as a burden to rural schools and communities, but as an opportunity for them to learn from what they are doing. Many approaches are possible, for as Sorensen and Hargreaves (1982) have illustrated, even with limited resources, an empirical attitude can lead to effective program evaluation in rural settings. For example, surveys or case studies can document issues in program planning and implementation. Intermediate outcomes of program activities can be assessed. Meta-analysis can be used to assess program effects in small schools and communities. Standardized data-collection questionnaires could be made available from a centralized service responsible for evaluation design and analysis of results. In return for training and technical assistance, several rural schools or communities might agree to a randomized test of the same program if those who serve as controls were guaranteed assistance with program implementation after the experimental period.

Data should be gathered, reported, and made accessible in ways that will inform the public and facilitate policy development, the selection of priorities, and the planning of prevention research and program initiatives. This pertains to local, State, and National levels (Human and Wasem 1991; Swaim et al. 1986). Therefore, to the extent possible, rural citizens should be involved in gathering, analyzing, and interpreting information about alcohol use and alcohol-related problems in their own communities. As Oetting and Beauvais (1990) have observed, a local survey can be an important intervention in and of itself. Reviewing demographic characteristics of the community and nonconfidential records also can help local program planners understand the unique characteristics of their community. Tracking such community information might become an ongoing project for a rural agency, service club, or high school social studies class. Data collected and analyzed by others but returned to the community also can help rural citizens to discuss their problems, monitor their progress in addressing them, and modify current prevention initiatives or plan new ones. Involving rural communities in research and evaluation thus fosters an interactive approach that is as important to the prevention of alcohol problems as the prevention programs themselves (Tuchfeld and Marcus 1984). Dialog and collaboration between those who live in rural communities and those who study rural youth also will enhance the quality of research and its contribution to the development of rural America. Recommendations include:

- Alternative approaches to the evaluation of rural prevention programs should be developed and tested.
- Investigators and agencies collecting data on alcohol use by rural youth and alcohol-related problems in rural areas should collaborate with each other and with other agencies and disciplines to conduct more comprehensive studies of rural life.
- Rural youth and adults should be engaged in efforts to collect, analyze, and interpret data about alcohol use and alcohol-related problems in their own communities. Local databases should be established and used in prevention planning.

NOTES

1. Called standard metropolitan statistical area from 1959 to 1983.
2. Here "rural" refers to areas meeting both Census Bureau and OMB definitions of rural, or roughly 15 percent of the total U.S. population.
3. OSAP was renamed the Center for Substance Abuse Prevention (CSAP) in 1989 when the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) was reorganized as the Substance Abuse and Mental Health Services Administration (SAMHSA) within the National Institutes of Health.
4. Under that classification system, there are four types of rural areas. Adjacent rural areas are counties contiguous to or within MSAs, which are very similar to their urban neighbors. Urbanized rural areas are counties with a population of 25,000 or more but distant from an MSA. Frontier areas are counties with population densities of fewer than six persons per square mile; these are the most remote areas, with none existing east of the Mississippi River. Countryside rural areas include the remainder of the country not covered by metropolitan or other rural designations (Patton 1989).
5. National health objectives for the Year 2000 (DHHS 1991) do not mention rural youth.

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A Drug Abuse Prevention Strategy for Rural America

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THE PAUCITY OF INFORMATION ABOUT DRUG ABUSE PREVENTION IN RURAL COMMUNITIES

Drug use is a significant problem in many parts of rural America (Donnermeyer 1992; Peters et al. 1992; Robertson 1994). In a review of the literature, Donnermeyer (1992) concluded that the level of alcohol use is the same in rural and urban areas and that the level of marijuana use in rural areas is approaching that for urban areas. The use of inhalants and stimulants is higher in rural areas than in urban areas, but the use of other hard drugs such as cocaine is lower in rural areas. Little is known about whether the factors that contribute to drug abuse in rural communities are the same as those in urban areas and whether prevention strategies that seem to make a difference in urban areas (e.g., Hansen 1992) will work in rural areas.

Given these gaps in knowledge, one strategy might be to commission longitudinal studies of predictors of substance use in rural areas and develop and test prevention programs only when the results of these predictive studies are available. It may be more efficient, however, to develop and test prevention strategies for rural areas based on what is currently known. Moreover, experimental evaluations of prevention programs should be organized to embed research on predictors of adolescent substance use and other problem behaviors within the research design. This strategy could save time and avoid the loss of several cohorts of youth to drug abuse that could occur if researchers waited for the results of longitudinal studies. Further, the strategy could provide better tests of theories about factors that contribute to drug abuse because studies would determine whether the modification of presumed risk factors contributes to prevention. For example, if parental monitoring and limit-setting influence adolescent drug use in rural settings as they do in urban areas, interventions to affect these parenting practices could be coupled with an examination of whether the changes are associated with a lower probability that children will start to use drugs.

This chapter describes a strategy for developing and evaluating drug abuse prevention programs in rural communities that is based on the large body of evidence currently available about the factors that contribute to drug abuse. While the bulk of the evidence comes from urban settings, it is the appropriate starting place for research on prevention in rural settings.

TOWARD A CONTEXTUAL DEFINITION OF "RURAL"

Variability in drug abuse rates in rural areas has been noted (Donnermeyer 1992; Peters et al. 1992). Accounting for this variability would be valuable for understanding what influences drug abuse and what might be done to prevent it. When "rural" is defined simply in contrast to "urban," the diversity of rural areas is obscured. Although some investigators have distinguished among rural areas in terms of their size (e.g., small towns versus open country), topographic and structural characteristics are unlikely to be functionally related to the prevalence of drug abuse. For research purposes, characteristics of rural areas that are significantly related to patterns of drug abuse need to be discovered.

A promising candidate is the means of production. Harris (1979) has written extensively about the ways in which the productive activities of human groups influence their cultural practices. For diverse societies—from prehistory to modern America—Harris has shown that what people do to make a living influences how they live together and what they believe. For example, changes in the structure of the American family can be traced to the transition from a farm economy to an urban industrialized economy (Harris 1981, 1989).

Perhaps patterns of drug abuse in rural areas are influenced by the dominant production activities in those areas. What activities might support or encourage substance use? The most obvious is the production of drugs themselves. Is the rate of marijuana use higher in rural areas where marijuana is grown? Is the rate of stimulant use in rural areas related to the abundance of methamphetamine labs located in rural areas? What about the effects of tobacco production on use by youths? Young people might be more inclined to take up substance use if they live in an area where some adults derive their income from drug production and others derive some of their income from the success of the drug producers. Analyses on questions such as these are worth pursuing. Donnermeyer's (1992) review concluded that farm youth had lower rates of alcohol and marijuana use than did rural nonfarm youth. If rural areas involved in the production of drugs also have a high prevalence of youth drug abuse, it would point to areas for concentrating prevention resources.

Risky occupations may also encourage licit and illicit substance abuse. For example, miners and loggers have a high risk of injury. A macho culture that ridicules worry about the consequences of risk-taking may provide psychological comfort to those who are forced to take such risks. Such a culture may minimize talk about the deleterious consequences of substance use. If legitimate productive activities such as mining and logging in fact encourage drug use, this has important implications for how to intervene to prevent drug abuse.

Finally, unemployment and underemployment may also be worth examining. The lack of productive activities means that people are more susceptible to drug use because they lack basic reinforcers (McDowell 1982). The question of whether rural areas with high rates of unemployment have higher drug abuse rates should be examined.

A DRUG ABUSE PREVENTION STRATEGY FOR RURAL AMERICAN COMMUNITIES

This section presents an overview of the steps rural communities might take to reduce the prevalence of drug use among their young people. It is based on the best available evidence on factors influencing drug abuse and the programs and policies that might affect those factors. The factors known to contribute to drug abuse are enumerated, and the kinds of interventions that modify or ameliorate them are described. Most evidence comes from nonrural settings. Yet, it is a starting point for the design and testing of interventions and for further research on the factors that lead to drug abuse in rural areas.

Family and school are two major contexts of development. In the following section, the practices, problems, and programs associated with family and school are presented and then discussed in the broader framework of community.

The Need To Evaluate Comprehensive Interventions

The time has come for the development and evaluation of comprehensive community interventions to prevent drug abuse and all other problems of youth (Hawkins and Catalano 1992). There are at least three reasons for making this statement.

First, drug abuse is intertwined with other problem behaviors. Research has clearly demonstrated that the use of licit and illicit substances during adolescence is correlated with most other problem behaviors, including antisocial behavior, precocious sexual activity and risky sexual behaviors, dangerous driving, poor school performance, and general risk-taking (e.g., Bachman et al. 1981; Barnes 1984; Biglan et al. 1990*a*; Brennan 1979; Dryfoos 1990; Elliott and Morse 1987; Epstein and Tamir 1984, 1985; Hawkins et al. 1986; Jessor 1987*a*,*b*; Loeber and Dishion 1983; Malcolm and Shephard 1978; Miller and Simon 1974; Wechsler and Thum 1973; Welte and Barnes 1987; Zabin 1984; Zelnik et al. 1981). Moreover, these behaviors are statistically related (Donovan and Jessor 1985; Donovan et al. 1988; Farrell et al. 1992; Metzler et al., in preparation; Osgood et al. 1988), and the relationship holds for both males and females (Donovan and Jessor 1985; Farrell et al. 1992). How likely is it that substance use can be excised from this constellation of problem behaviors?

Second, drug abuse stems from a complex, but well-understood set of social context factors—the same ones that are associated with most other problem behaviors (Hawkins et al. 1992*b*). The most prominent factors involve peer groups, parents, and schools. To prevent drug abuse, it is necessary to address all of these influences.

Third, community interventions are needed to supplement the prevention efforts of schools and to support and influence schools and families. Comprehensive community programs might seem too expensive to justify merely preventing drug abuse. However, if properly designed, such programs could help to prevent the entire range of youth problem behaviors that plague American society—crime, teenage pregnancy, academic failure, smoking, alcohol use, as well as illicit drug use. Thus, promoting community change to prevent these problems is a top priority for the 21st century. Moreover, community interventions may prove to be relatively inexpensive, because they involve mobilizing and refocusing existing elements of the community to attack these problems.

Association With Deviant Peers

The most proximal influence on adolescent substance abuse appears to be association with substance-using peers (Hawkins et al. 1992*b*). This is

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perhaps one of the better documented findings in the study of adolescent behavior. Although most studies have focused on the degree to which adolescent substance use is associated with peer substance use, a general measure of peer engagement in diverse problem behaviors predicts engagement in a variety of specific problem behaviors (Ary et al., in preparation; Biglan et al. 1990*a*; Metzler et al. 1994). The mechanisms by which peers influence others to use drugs includes experimentation with substances in social groups (Friedman et al. 1985), social reinforcement of talk favoring these behaviors, and social modeling (Kandel et al. 1986).

Parenting Practices

A number of parenting practices contribute to adolescent drug abuse and other problem behaviors. The two most important appear to be parental monitoring and limit-setting. Monitoring involves parents keeping track of what their children are doing when they are not around. It includes the amount of time the child is left home without supervision and the degree to which parents find out what the child is doing at school and with friends. Richardson and colleagues (1989) found that eighth grade students who were home alone after school had a significantly higher likelihood of substance use even when other variables predictive of substance use were controlled. Other researchers have found that a general measure of parental monitoring was inversely related to association with deviant peers and, through it, the development of substance use and other antisocial behavior (Dishion 1990; Dishion et al., in press; Patterson et al. 1989, 1992). Work by the authors has shown that inept monitoring predicts association with deviant peers, which, in turn, predicts engagement in general problem behavior, a construct that includes licit and illicit substance use (Ary et al., in preparation).

Limit-setting involves parents making clear rules about the things their children can and cannot do and consistently enforcing those rules. Recommended parenting practices include reinforcement for rule following and mild but consistent punishment for rule violations. The most problematic form of limit-setting involves parents who do not make clear rules, do not consistently enforce them, but sometimes use harsh punishment. Typically, these parents have had a pattern of using harsh and inconsistent discipline since their children were quite young. Parents using these discipline practices are more likely to have children who are aggressive, and such aggressiveness contributes to academic failure and peer rejection when children enter school (Patterson et al. 1989). This, in turn, leads to associations with other rejected young people—the deviant peer group.

Another parenting practice that may be important is positive involvement with children (Patterson et al. 1992). Modeling studies on the influence of parental practices frequently do not include positive involvement because it is highly (and inversely) related to ineffective limit-setting (Patterson et al. 1992). Presumably, parents who get involved with their children in recreational and constructive activities help develop their childrens' skills, learn more about what their children are doing, reduce the pull of deviant peer groups, and increase their ability to reinforce their children's behavior. Parents who use harsh and inconsistent discipline practices probably do not get as involved with their children because interactions tend to be aversive for both parent and child. Efforts to encourage positive involvement with children would be an important goal for communities that want to decrease the incidence of substance use and other problems.

In addition to specific parenting practices, a number of contextual conditions for families appear to influence children's development. These include poverty, parental isolation from adult social support, single parenting (Patterson et al. 1992), and parental substance use (Hawkins and Catalano 1992). Some of these factors affect children because they undermine effective parenting practices (Reid and Patterson 1991). For example, poverty and single parenting appear to decrease the likelihood that parents will have the time or the motivation to monitor their children and to make and enforce clear rules.

Applicability of a Social Context Model to Rural Areas

A legitimate concern is whether these models of the development of adolescent problem behavior can be generalized to rural communities. To test this issue, data obtained over 2 years in six small Oregon communities were used. The principle economic activities in these communities were tourism, logging, fishing, and farming. Initial results are summarized here.

Data were available from 1,077 young people in the six communities. Data were collected when students were in grades 7 and 9 (assessment 1) and 2 years later when they were in grades 9 and 11 (assessment 2). An extensive questionnaire asked about substance use, other problem behavior, association with deviant peers, and family relations. Items were derived from extensive prior work conducted by Patterson and colleagues at the Oregon Social Learning Center (OSLC) (e.g., Patterson et al. 1992) and by the authors' group (Metzler et al. 1994).

Figure 1 presents the model that was tested. It consists of a measurement model developed on data collected at assessment 2 and a structural model in which the assessment 2 problem behavior construct was predicted from data collected at assessment 1. Confirmatory factor analysis provided support for the measurement model in which the observed relationships among drug use, academic failure, and antisocial behavior were adequately accounted for by the problem behavior construct. The substance use index included items involving alcohol, cigarettes, smokeless tobacco, and illicit drugs. This result is consistent with two other studies conducted with young people in urban settings (Ary et al., in preparation; Metzler et al. 1994). At least in these rural communities, problem behaviors are interrelated.

The full model hypothesized that both coercive family processes and positive family relationships influence inept parental monitoring, and that these parental practices, in turn, influence whether the young person associates with deviant peers. These variables were assessed at the same time, making it impossible to test whether coercive processes and lack of positive family involvement are antecedent to inept monitoring and association with deviant peers. However, Ary and colleagues (in preparation) did find this temporal ordering in a data set that measured coercion and positive family relationships at time 1 and monitoring and deviant peers at time 2. Moreover, a review of evidence on antisocial behavior indicated that coercive family processes preceded the development of association with deviant peers (Patterson et al. 1989).

Further, the model hypothesized that inept parental monitoring and association with deviant peers at assessment 1 predict problem behavior at assessment 2. Family coercion and positive family relationships were significantly negatively related, and inept parental monitoring was more likely when family relationships were poor. Coercive process also predicted inept monitoring, though to a lesser extent. Association with deviant peers was significantly related to inept parental monitoring, coercive processes in the family, and, to a lesser extent, to poor family relationships. Both inept monitoring and association with deviant peers predicted problem behavior 2 years later. The model accounted for 31 percent of the variance in problem behavior. (Having positive family

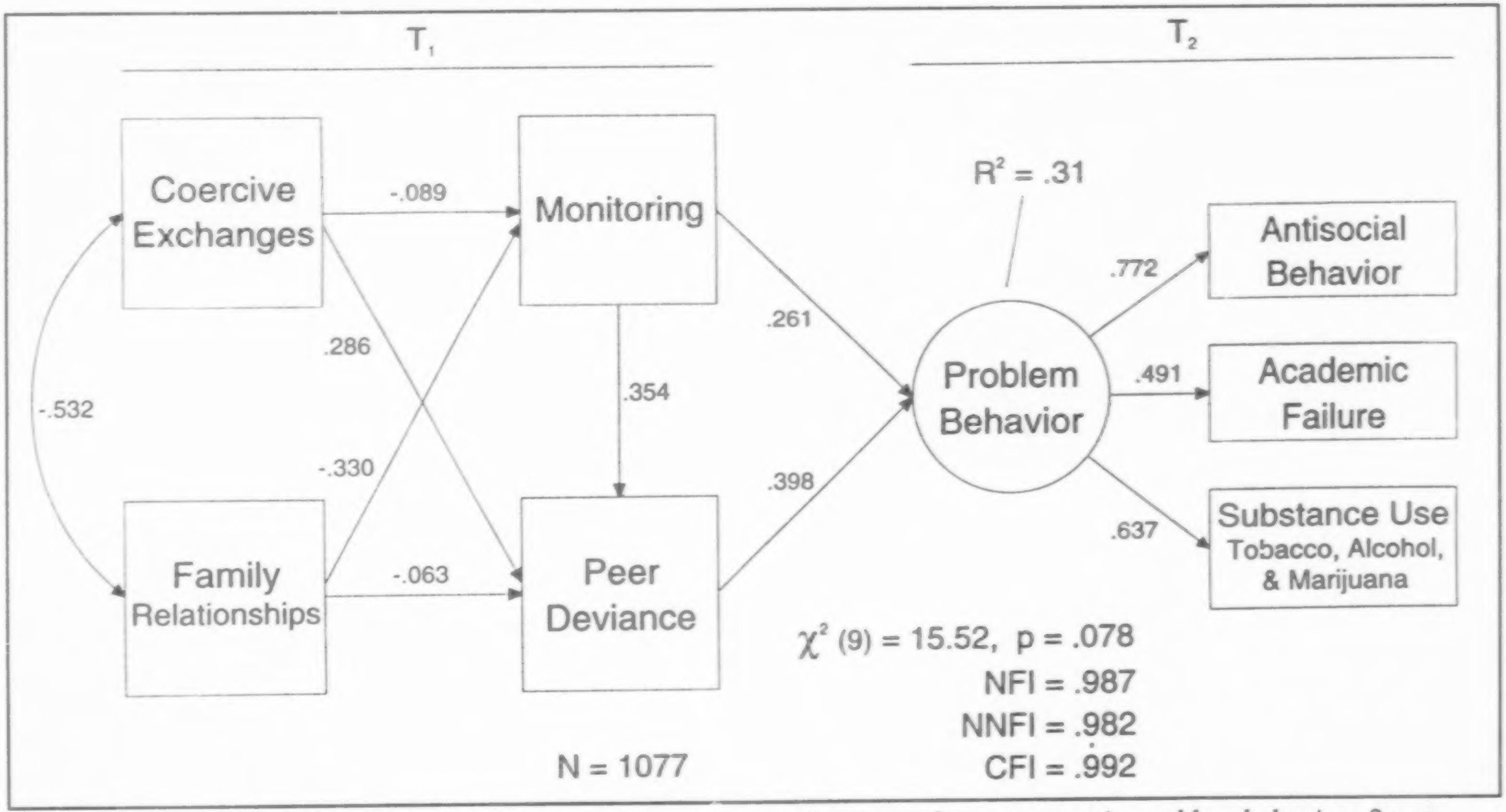
T1
T2
Coercive Exchanges
Family Relationships
Monitoring
Peer Deviance
Problem Behavior
Antisocial Behavior
Academic Failure
Substance Use Tobacco, Alcohol, & Marijuana
-.532
-.089
.286
-.330
-.063
.354
.261
.398
R² = .31
.772
.491
.637
χ² (9) = 15.52, p = .078
NFI = .987
NNFI = .982
CFI = .992
N = 1077

FIGURE 1. *A model of the relationship between peer and parent factors and engagement in problem behaviors 2 years later. Data come from 16 rural Oregon communities.*

relationships at assessment 1 was associated with less academic failure 2 years later for both this and an urban data set (Ary et al., in preparation)).

Values of the various fit indices (NNFI = 0.982; CFI = 0.992, and the chi-square test statistic, $\chi^2 = 15.52(9)$, $p = 0.078$), support the relationships hypothesized in this model of general problem behavior. At least in these six rural communities, young people who engage in one problem behavior are more likely to engage in others. Moreover, families characterized by high levels of conflict and little positive involvement are likely to have poor parental monitoring, and their children are more likely to associate with deviant peers. The associations with deviant peers, coupled with poor parental monitoring, influence the development of problem behavior as much as 2 years later.

Increasing Parenting Skills Through Parent Training

An obvious implication of this evidence is that communities could reduce the prevalence of substance abuse and other problem behaviors by increasing the prevalence of effective parenting practices. There is substantial evidence for thinking that this can be done, though to date research on changing parenting skill has involved only clinical interventions. This research shows that parent skill can be altered and that child behavior will change as a result (McMahon and Wells 1989; Patterson et al. 1992; Webster-Stratton et al. 1988). It has yet to be shown that parent training actually prevents the development of antisocial behavior or drug abuse because studies of the size and duration needed to test these questions have not been conducted.

There are substantial barriers to translating what is known about effective parenting into widespread community effects. Most communities do not have validated parenting-skills training programs available. Many parents in need of such programs will not volunteer for them or remain in them (Hawkins et al. 1991; McMahon et al. 1981). Even the best parenting-skills programs have limited effects when families are in extreme poverty or are socially isolated (McMahon and Wells 1989). Despite the barriers to successfully implementing parenting-skills training, many programs of varying complexity are available. Three examples are discussed here.

The Adolescent Transition Program. In an effort to reach families in need of parenting-skills training, an intensive, behaviorally oriented intervention was offered to parents of middle school children identified by the school district as having behavioral, social, or academic problems. The Adolescent Transitions Program (ATP) parenting curriculum is based on models developed at OSLC during two decades of research (Patterson et al. 1992). Evaluation evidence indicates that the program has a significant impact on parenting practices and young people's behavior (Dishion and Andrews 1995). Its replicability is being tested in a randomized intervention/wait-list control trial in eight small Oregon communities (populations 1,800 to 10,000) with the help of the OSLC program developers.

The 12-session course was designed to help parents learn and practice parenting skills. General topic areas included monitoring, developing incentive contracts, establishing rules and setting limits, delivering effective consequences, and parent-child negotiations. Each session also spent time on an aspect of parent-child communication (e.g., neutral requests, praising, and active listening). Coleaders were hired from the community and trained at Oregon Research Institute (ORI). The leaders traveled to ORI every 2 weeks to meet as a group to discuss class issues common across communities (e.g., how to keep more fathers involved in ATP and in positive parenting issues; how to encourage parent follow-through at home) and to prepare for upcoming sessions. Leaders also called the parents each week between class sessions to answer home practice questions and offer support. Home visits by the group leaders were scheduled as needed, and most families were visited one to three times during the 12 weeks of classes. In addition to the benefits associated with development of new parenting skills and the support from other class members, parents were offered material incentives for their participation. These included monetary rewards based on attendance, free child care, food at the meetings, and drawings each week at class for family activity games.

Preliminary analysis of ATP outcomes were positive in comparisons of relatively small samples of intervention (N = 60) and wait-list (N = 62) families. Scores on all three subscales of the Parenting Scale (Arnold et al. 1993), "verbosity," "over-reactivity," and "laxness," improved significantly for the intervention group compared to the wait-list group. These findings suggest that ATP parents were more controlled and consistent after attending the classes. Measures of problemsolving behaviors and satisfaction also showed that intervention group parents significantly improved compared to the wait-list parents. A similar measure of parent-reported child behavior and satisfaction showed no change. A series of phone interviews with parents conducted at pretest and posttest showed some, but not significant, improvement for the intervention group on subscales rating child antisocial behavior, child adjustment, and child substance use. Results from the ATP classes are encouraging because they suggest that a clinically developed and tested model of parenting-skills development can, with appropriate support, be replicated by nonclinicians.

Preparing for the Drug Free Years. Another approach to offering parenting skills is specifically designed to assist parents in taking the steps needed to prevent drug abuse. Developed by Hawkins and colleagues (1991), Preparing for the Drug Free Years (PDFY) consists of five weekly sessions that provide parents with information and strategies to help them reduce the chances that their children will be drug users as they grow up. The Oregon Office of Alcohol and Drug Abuse Programs initiated an ambitious program to train volunteers from throughout the state to be PDFY group leaders. The program was launched with a statewide advertising campaign and several hundred workshops. However, evaluation of the program's efficacy was hampered by a lack of data returned to State offices by the group leaders.

After an auspicious start, anecdotal reports indicated two general problems: recruiting parents to attend the free workshops was difficult, and many of the trained instructors were not actively leading PDFY groups. To counteract the poor attendance, the authors attempted to muster local resources to support the classes in two communities. Flyers were sent home with school children, child care was provided, incentives were offered to those attending, civic groups helped promote the classes, and the local media were used to advertise. Despite these efforts, local parental support for the program did not materialize; a total of three families attended the workshop in the two communities. Clearly, more must be learned about what motivates parents to invest their energies in acquiring new skills that will benefit their children.

The authors' experience also showed a need to know more about the motivation of group leaders to offer parenting skills classes. To address this question, a mail survey was conducted of the 723 PDFY group leaders trained from 1989 through 1992 (Irvine et al., in press). A total of 52.6 percent of the surveys were completed and returned. Results indicated that 69.7 percent had not led a group in the last year, including 15 percent who had never led a group. The perceived benefits of leading PDFY groups focused on the social value of the program ("PDFY will make a difference," "PDFY helps individual families," "PDFY benefits the kids"), while the barriers to leading groups involved reaching the most needy parents, recruiting class members, and having enough time to devote to the classes.

Stepwise regression analysis accounted for 28 percent of the variance in rated intentions to teach the program in the future. Significant predictors were competing interests, general burnout, increased fatigue from PDFY, more work ("already too busy"), and loss of free time. A similar analysis of benefit items explained 7 percent of the variance and identified two important items: "I have fun" and "addresses society's drug problems."

Barriers that significantly predicted actual teaching of the workshops accounted for only 2.8 percent of the variance. These barriers were no or inadequate financial reimbursement and anxiety from teaching PDFY. Another stepwise regression linked benefits with number of workshops led and explained 9.7 percent of the variance. The benefits that predicted teaching included "developing rapport with the families," "quelling criticism," "like to work with co-leader," and "helps people of color."

If communities are to foster parenting skills and make resources available to those who require the skills, strategies are needed to make the programs more attractive to both parent participants and group leaders. Anecdotally, it seems that increasing the personal contact that class leaders have with parents before the program starts, providing food at sessions, and having experienced class leaders will increase parental participation. Once class leaders have taught the course, they can be much more convincing in explaining its value to parents. This, of course, points to the need to retain experienced leaders.

This study suggests that volunteers are discouraged from teaching the program because of competing interests, the logistics of organizing the classes, and the anxiety generated by teaching them. Strategies that increase the fit between the needs of a volunteer and the job to be performed will increase the longevity of that individual with the program (Francis 1983). Research indicates that some individuals volunteer for jobs to gain new skills and that they remain in those positions because of intrinsic rewards associated with the work (Lammers 1991). Other volunteers become involved for altruistic reasons, but they also may value recognition or being part of a group (Wilson 1976). Assuming that volunteers work for a "motivational paycheck," communities should pay attention to how to provide the needed incentives, whether they be in the form of intrinsic or extrinsic rewards (Lauffer 1982; McClam 1985).

Media To Affect Parenting Practices. Faced with the cost of providing parenting-skills training to small groups of parents and the barriers to reaching parents through face-to-face training, the authors' group has been exploring some brief, lower cost interventions to try to reach a relatively larger proportion of parents and affect their parenting activities.

After several attempts using alternative methods, it was concluded that schools are the most effective way of reaching a large proportion of parents. The first school-based effort was an activity designed to get parents and children talking about tobacco use. A parent group in one community suggested sending middle school students home with a quiz about tobacco. The offer of rewards to classes that got a high percentage of participation resulted in the majority of parents in each classroom talking with their children about the hazards of tobacco use. An experimental evaluation of this and related parent and child targeted activities was conducted across six communities (Biglan et al., in press). Eighty percent of the parents were reached. Parents reported significantly more conversations with their children about tobacco use due to the campaign. Young people were prompted by the campaign to rate spitting tobacco as significantly less safe than they had, to know significantly more about tobacco company promotions to encourage smoking, and to have significantly lower ratings on intentions to smoke.

Encouraged by this, the authors are piloting a set of school-based parent-child activities designed to get parents to establish clear rules and consequences for behaviors that might lead to substance use or other problems. After being piloted in three classrooms, the program has been revised to consist of four activities: (1) a pretest designed to assess parenting practices and to obtain community-based normative data about parenting practices; (2) a letter to parents summarizing the local parenting norms with regard to monitoring and limit-setting; (3) a monitoring activity in which parents are quizzed about what they know about their children; and (4) a rule-making activity designed to help parents establish rules (and effective consequences) regarding their children's associations with peers.

Schools

Schools can influence drug abuse in three ways. They can provide prevention programs that are specifically designed to prevent substance use. They can prevent academic failure, which tends to be related to substance abuse. They can identify students whose social behavior puts them at risk of developing substance abuse and remediate those difficulties.

School-Based Prevention Programs. There is controversy regarding the effectiveness of school-based programs to prevent drug abuse. Two meta-analyses that have been conducted on studies of the school-based drug abuse prevention programs did not agree in their conclusions. Tobler (1986) analyzed 143 studies for the effects of substance abuse prevention programs. Alcohol, illicit drug use, and tobacco use were all found to be significantly deterred by programs that focused on peer influences. These programs sensitized young people to peer influences and taught them skills for coping with social pressures to use substances. They often used peer leaders to conduct components of the program. Tobler also concluded that programs that provided for positive alternative activities have a significant effect in deterring drug abuse among young people who are at high risk for substance abuse.

Bangert-Drowns (1988) focused on a smaller number of studies after eliminating those that dealt exclusively with tobacco use and those that were deemed methodologically flawed. The conclusion was that, although prevention programs affect knowledge and attitudes toward substance use, they do not affect substance-using behavior.

A third, more recent review of the literature classified studies in terms of 12 content areas (e.g., information, decisionmaking, and resistance skills) and defined clusters of studies based on their content (Hansen 1992). This was not a meta-analysis, but rather a qualitative review. It concluded that social influence programs (sensitizing young people to influences to use substances, teaching skills for resisting those influences) and comprehensive programs (combining social influence with elements such as information and decisionmaking training) have a significant deterrent effect on substance use.

The evidence for the efficacy of prevention programs focusing on peer influences is thus uncertain. It appears appropriate for communities to develop substance abuse prevention programs as a strategy, but depending on school-based substance abuse prevention programs alone may be a mistake.

The Need To Enhance Academic Success. Academic failure is a predictor of the onset and continued use of licit and illicit substances (Hawkins et al. 1992*b*). Young people who fail in school tend to become friends with others who fail. This enhances the formation of peer groups that reject school and begin to experiment with other reinforcing activities. Ensuring that young people have the skills to succeed in school ensures that they have reinforcing alternatives to substance use and other problem behaviors.

Communities that want to prevent substance use and other youth problems should carefully examine the instructional practices of their schools. Much has been written about educational reform, but the importance of effective instructional practices has largely been overlooked. Discussion of educational reform tends to focus on such major issues as the length of the school day and year and the restructuring of schools. However, precisely what happens when teachers teach and children learn is often ignored.

The effective features of instruction have been well identified by research, but they have not been publicized in most communities. Becker (1986) provided a summary of the key features of instructional approaches that result in successful education:

1. Objectives are specified.
2. Preskills are tested to ensure appropriate placement.
3. Procedures are developed to motivate and engage the student in active learning.
4. Instruction is designed to teach the targeted objectives effectively and efficiently.
5. Differential time is allowed for individual students to reach mastery.
6. Ungraded, frequent testing is provided to monitor progress.
7. Corrective-remedial procedures are provided if an approach fails.
8. Adequate practice for mastery of subskills is provided.
9. There is testing for longer term mastery of objectives.

Approaches to instruction with these features are referred to as mastery learning models (Becker 1986). The two most extensively tested models of this type have been Bloom's Mastery Learning (Bloom 1976) and Engelmann, Becker, and Carnine's Direct Instruction (DI) (Becker 1986). When used in high-risk educational settings, both have repeatedly produced significantly higher levels of learning than the traditional instruction techniques to which they have been compared (Becker 1986).

The most extensive test of DI compared its effects with those of eight other instructional approaches to elementary education. Using a very large sample of students leaving Head Start and beginning first grade, the study was the largest educational evaluation ever conducted. The DI materials consisted of 43 programs for teaching arithmetic, reading, spelling, cursive writing, expressive writing, facts, and using library books in grades one through three. DI achieved significantly better results than did any of the other approaches. It was the only model to raise students from under the 20th percentile to the 50th percentile in math, spelling, and language. On their total reading score (comprehension and vocabulary), students went from the 20th percentile to the 41st. On decoding skills they went to the 82nd percentile from the 20th. Followup studies indicated that although there was deterioration in students' performance in subsequent grades when DI procedures were no longer in use, much of the gain was maintained. A followup when these children were 18 years old indicated that there were fewer retentions and dropouts and more graduations than was true for comparison group students (Becker 1986).

Community members who want to ensure that all of a community's children are properly educated will do well to ensure that well-supported learning models such as mastery learning or cooperative learning models are used in their schools. The abject failure of schools to adopt proven educational techniques points to the need for more research on how to influence the adoption of effective instruction.

Identifying and Preventing Social and Behavioral Problems. Assessment procedures are available that permit the identification of students most at risk for social and behavioral problems, including drug abuse. Rating and observation measures of children's peer- and teacher-directed social behavior are available. The review by Bullis and Walker (1993) describes those most successful in identifying children likely to develop difficulties. Schools that adopted these assessment procedures can identify and then help these children.

Interventions to address social and behavioral problems are similarly well defined (Bullis and Walker 1993). A good example is the RECESS program. It was developed to remediate aggressive and antisocial behavior patterns among children in kindergarten through third grade. It significantly reduced aggressive behavior in children (Bullis and Walker 1993; Walker et al. 1981, 1984). In this program, the target child and his or her peers are tutored in positive, rather than negative, forms of aggressive social behavior (e.g., Bierman 1986; Bierman and Furman 1984). Direct instruction regarding playground rules ensures that the rules are understood (e.g., Madsen et al. 1968). Group contingencies delivered to both the target child and peers support positive peer involvement (Bierman and Furman 1984). A response-cost-point system provides a mild, effective conse-quence for aggressive behavior or rule violations (Becker 1986).

Cooperative Learning. Because academic failure and association with deviant peers are both risk factors for substance abuse and other problems, interventions could be valuable that promote academic success, while reducing the tendency of high-risk children to congregate with each other. Cooperative learning programs in which students learn in heterogenous groups do this and with promising results. Johnson and Johnson's (1983) review of this research indicates that participation in cooperative learning increases the academic performance of low-performing children, while not reducing the performance of children whose performance is better. At the same time, it increases the social acceptance of higher risk children by other children, which is a key to preventing the socially rejected children from forming a peer group that promotes deviant behavior.

Hawkins and colleagues (Hawkins et al. 1988; Hawkins and Lam 1987) have shown that knowledge about effective instruction and classroom management can be translated into improved outcomes for middle school students. They evaluated the effects of training middle school teachers in the use of effective classroom management techniques, cooperative learning, and mastery-oriented instruction. Young people in these classrooms showed improvements in a variety of areas predictive of later substance use, including attachment to school, lowered rates of aggression among boys, and lowered suspension and expulsion rates.

In sum, strategies are available for communities and schools to use in identifying and intervening with children at risk for behavior problems, social rejection, and academic failure. What is needed is community awareness of and commitment to these strategies and their goals.

What Communities Can Do To Prevent Adolescent Substance Abuse

The material just presented is based on a good deal of research about the factors contributing to youth problems and the interventions that could prevent them. There is far less research on what other sectors of the community could do to reduce risk factors for substance abuse and other problem behaviors. In part, this is due to what Wallack and associates (1993) call the individualistic bias in public discussions of social problems. In this society, it is far more likely that problems will be examined in terms of the behavior of individuals than in terms of how organizational policies and actions contribute to them or could contribute to their solution.

Despite this, there is some empirical basis for studying what sectors of the community, other than parents and schools, could do to reduce the risks of drug abuse and other problems. This section draws attention to key problems and example solutions and discusses how communities might be helped to organize themselves.

In Locus Parentis. There is a parental labor shortage in many American homes. The proportion of single-parent families has doubled since 1960, and 60 percent of today's children will live with a single parent at some point in their childhood (Marshall 1991). At the same time, the proportion of families that have both parents working has increased as the percentage of women in the workforce has gone from 19 percent in 1900 to 57.4 percent in 1989 (Marshall 1991).

Individual families must find ways of providing supervision for children in the absence of parents. It is now clear that communities need to supplement the functions of parents in this arena. Constraints on the availability and cost of child care have resulted in the most at-risk children and adolescents being unsupervised and unchallenged during much of their free time. Community programs can see to it that prosocial behavior is nurtured and problem behavior is limited.

One way that communities can help is by creating environments where young people can become involved in activities that encourage the development of skills and social relations that are incompatible with the development of problem behaviors. Program participation would also increase the amount of time young people's activities are monitored and set limits on their experimentation with dangerous or unwise behaviors.

Strategies designed to attract young people at risk for substance abuse and other problem activities need to be identified.

Jones and Offord (1989) evaluated one such program in Ottawa public housing. Two full-time staff members offered sports and other activities for children between the ages 5 and 15. Participation brought about a significant reduction in antisocial behavior in the housing complex when compared with a similar housing complex that did not have such a program.

Communities can also set more distal limits on the behavior of young people in an effort to reduce the risk of substance abuse and other problems. Obvious examples include laws regulating minors' access to alcohol and tobacco and concerted efforts to deal with truancy. Young people not in school often can be out and about the community with no fear of raising questions about their nonattendance in school. There is increased public discussion of curfews, which many communities have but few enforce. Some object that curfews encroach on the civil liberties of young people. Research that clarifies values in reducing the incidence of problem behavior in communities is needed to see whether the cost of limiting young people's freedom is outweighed by its benefits.

Family Support. Correlational evidence suggests that social support for parents can improve their functioning as parents. Three types of social support appear beneficial to adult functioning: (1) esteem or emotional support, (2) instrumental or material support, and (3) informational support (Cohen and Wills 1985). Organized programs to provide such support have been systematically evaluated for families of infants and young children, but not for families of older children. Such programs appear to improve child and parent functioning at the same time that they increase social support for parents (Andresen and Telleen 1992; Dokecki et al. 1983; Heinicke 1990; Heinicke et al. 1988; Johnson 1989; Kagey et al. 1981; McGuire and Gottlieb 1989; Pierson 1988; Polirstok 1987; Ramey et al. 1988).

Effective programs have typically combined parent education with one or more of the following elements of family support: home visits or other outreach efforts to establish a warm working relationship with the interventionist, parent support groups, links to health and social services in the community, and efforts to address a variety of practical and social needs. Further evaluation of these programs in preventing the development of youthful substance abuse and its precursors would be valuable.

Even if such programs are shown to be of value, the question of how communities can be induced to adopt and maintain them will remain. The answer lies in communities' developing practices that acknowledge and prize contented families and well-adjusted children. Various sectors of the community could contribute to the development of effective parenting skills. The key skills and examples of training programs were described above. Civic, religious, health care, and social service organizations could pool their resources and offer such training. Even if community organizations did not offer parent training themselves, they could fund others to do so and help to promote the programs. Similarly, community organizations could help promote effective parenting practices through the media. Finally, as companies come to see the value of strong families, the workplace will increasingly become a vehicle for promoting effective parenting.

The Problem of School Reform. School reform deserves special attention. As noted above, much is known about instructional and other practices that school systems should be using; less is known about how to influence them to adopt and maintain these practices. Efforts to implement validated teaching strategies are often unsuccessful (Fullan 1982; Gersten and Woodward 1992; Guskey 1990; McLaughlin 1990). Teacher-change models have had limited success because they lack specificity, concreteness, and intensity (Fuchs and Fuchs 1986) or because they require teachers to substitute new practices for old rather than allowing them to assimilate new ideas into current teaching styles (Gersten and Woodward 1992). The evidence suggests that teachers' adoption of effective practices would be fostered by a program of staff change that incorporates specific techniques (Carnine and Gersten 1985; Fullan 1982), enhances teachers' current teaching styles rather than dramatically altering them (Gersten and Woodward 1992; Smylie 1988), and offers support in the form of onsite technical assistance (Gersten et al. 1987).

Progress on this problem requires an analysis of the influences on school practices. One approach involves analyzing the consequences that select the behavior of individuals and the practices of organizations. The approach draws on behavior analytic principles of the role of reinforcement in individual behavior (e.g., Biglan 1995; Skinner 1953) and cultural materialist analyses of the selection of cultural practices (e.g., Biglan 1988, 1992, 1993, 1995; Biglan et al. 1990*b*; Harris 1979).

As currently constituted, most school districts are insulated from outside influence by a set of bureaucratic rules and contracts that shield school personnel from demands and criticism of parents and others in the community. Chubb and Moe (1990) described how such a bureaucracy evolved as successive waves of school reformers tried to ensure that their innovations outlasted their political control of the school system. In theory, school boards have the power to influence the practices of schools; in reality, decisions are in the hands of administrators and teachers through both written rules and institutional tradition.

The problem for school reform is twofold. First, there must be clear statements, based on empirical evidence, of what practices are needed and why they will be of value. Failure to do this creates the risk of changing school practices without improving them. This evidence has been suggested above. More comprehensive discussions are provided by Becker (1986) and by Wahlberg (1984, 1992).

Second, the consequences for effective school practice must be altered. This could be done using integrated strategies. One strategy could concentrate on sharpening the contingencies between outcomes and consequences to teachers, administrators, and elected officials; this would involve ensuring that student performance was measured appropriately and thoroughly and increasing the reinforcement for positive student outcomes. Some pay could be made contingent on increases in children's knowledge over time. Outcomes for districts, schools, grade levels, and individual classrooms could be published widely so that social reinforcement (or disapproval) could be mobilized for these outcomes. School districts, State agencies, and community groups could explicitly mobilize social recognition, cash prizes, and other rewards for those who contribute to the best outcomes.

Sharpening contingencies for the adoption of effective instructional and social behavior interventions is also needed. Widespread understanding of the basic principles of effective instruction must be generated. Parents, school board members, and civic leaders must be informed that all children can learn, and they will prosper most when instruction is based on well-documented, but oft-ignored principles. The evaluation of teachers and administrators should consider whether they adopt these practices.

Sharpening contingencies for outcome or practice would be facilitated by school reorganizations that allow parents to choose among schools. Chubb and Moe (1990) describe how school performance improved in the East Harlem school district when teachers were allowed to form any type of program they wanted, so long as they could get parents to send their children to it. Many have argued that such choice systems will lead to many parents choosing education that is not good for their children. To some extent this is an elitist argument, since the wealthy have been choosing private schools for their children for many years. The risk that ineffective programs will garner support must be empirically evaluated. It may be that allowing parent choice will work best if information about best practice in education is widely available.

Even if these proposals would lead to better educational outcomes, the question remains of how to move communities toward them. This is a matter for media and community organizing, issues considered below.

Community Organizing for Improved Childrearing

Empirical work is needed on how communities might be helped to improve childrearing outcomes. This is not a problem for which extensive evidence is available. Much can be said about the risks and protective factors for substance abuse and other problems. A good deal is known about interventions to modify these factors, but there is much less information about how communities can be assisted or induced to address these factors in a concerted way.

The problem of bringing about change in communities or States is more likely to be seen as a political problem than one appropriate for scientific research. A paradigm for research of this sort is needed, one that makes clear how to study interventions to affect cultural practices of communities and States. This issue is discussed in more detail in a forthcoming book (Biglan 1995), but some principles that might lead to a better understanding of how to bring about useful community change are mentioned below.

First, it would seem important to base efforts at community change on the best available evidence about risk and protective factors and interventions to affect these factors. This might seem to go without saying, but there are many examples of community change efforts that are not so informed (Biglan et al., in press).

Second, ongoing measurement of key risk and protective factors and outcomes for children is essential. Such measures are indicators of the effectiveness of a community's childrearing efforts. Regular publication and review of these indicators can help to prompt community leaders and organizations to take the steps needed to improve outcomes. Moreover, indicators can guide communities in the selection of programs and policies.

Third, systematic research on factors influencing community organization practices is needed. If communities are going to implement programs and policies that would prevent adolescent problem behavior, it will only be because diverse organizations become involved in childrearing issues and take effective action. Little is known about why civic, business, social service, or government agencies do or do not adopt specific programs and policies. A science of the influences on organization practices is needed, and that could shape community efforts to foster better childrearing practices.

A number of additional theoretical principles might guide community interventions. First, it would appear important to articulate the case for changed childrearing practices in terms that link specific innovations (such as family support programs) to outcomes important to influential members of the community (Biglan 1995). It is doubtful that most community leaders realize the costs of childrearing failures or the long-term benefits that would accrue to communities that adopt the best practices. Keeping these facts before the public is critical in generating the ongoing support needed to effect significant change.

Second, it is important to ensure that proposed innovations improve the cost/benefit ratio for influential individuals and key organizations. This principle rests on substantial evidence regarding the importance of costs and benefits for maintaining the behavior of individuals and the actions of organizations (Biglan 1995). Introducing innovations in community practice that benefit influential individuals and key organizations is one way of doing this. For example, one should have little trouble getting nonprofit groups to provide family support if their doing so involves an increase in their funding. Unfortunately, funds for such efforts are hard to come by in communities where the costs of current problems are only dimly understood and the possibilities for improved outcomes are not known.

However, there are many ways in which nonfinancial resources can be marshaled for community change. Public agencies that adopt useful programs can be assisted in making their contributions known to their constituencies. Public recognition and awards can be used to provide social reinforcement for the efforts of individuals. Such methods of marshaling social reinforcement for community change efforts need to be empirically evaluated. Finally, using media to generate public support for efforts to improve childrearing may increase the likelihood that any given effort achieves public support.

The Potential of Media

Surprisingly, the value of media for preventing drug abuse has not been investigated extensively, and their value in promoting changes in child-rearing practices has received even less attention. Evidence of the efficacy of media in promoting beneficial behavior comes from studies of health behavior (Farquhar 1991; Flay 1987*a,b*; Flynn et al. 1992), crime prevention (O'Keefe and Reid 1990), alcohol consumption (Barber et al. 1989), and drunk driving (Niensted 1990). There is also ample evidence that media influence behavior in nonbeneficial ways (e.g., Rosenthal 1990; Surette 1990). Thus, there are compelling reasons to explore the potential of media for reducing drug abuse and other problems in rural communities.

Media could serve at least four functions in efforts to reduce drug abuse and related problems. First, the media could help set an agenda for addressing the risks and protective factors relevant to these problems. Ongoing media advocacy about the costs of current childrearing outcomes and the benefits of change could help to create a normative climate supportive of an agenda for change. Wallack and colleagues (1993) argue that such advocacy should target the organizational policies and practices that need to be changed, rather than implying that individuals should be expected to change while the environment remains the same. Such advocacy would make extensive use of data on the problems and risk and protective factors in the local community and would draw on the evidence about the costs and benefits of affecting risk factors and reducing the incidence and prevalence of problem behavior.

Second, there might be advocacy for specific policies and programs. It is unlikely that useful changes will occur in specific school, government, social service agencies, and health care provider practices simply because the general need for improved childrearing is understood. Whether media advocacy can prompt organizations such as schools to adopt effective programs is less clear, but well worth evaluating. Media could be targeted directly at those in positions to decide on policy and program adoption and on those who might influence decision makers. For example, getting schools to adopt effective instruction may require advocacy with both school personnel and parents.

Third, media could directly affect the practices of parents and teachers. Given evidence that parents can learn to use key parenting skills from video tapes (e.g., Webster-Stratton 1982), there should be a systematic examination of whether their skills could be affected through mass media. Research could evaluate the effects of campaigns to increase specific parental behaviors such as setting effective limits and monitoring children's behavior. Similarly, research might examine whether teachers' choices of instructional techniques can be influenced by media advocating instructional practices that are well validated.

Fourth, media could directly influence children's behavior. For example, Flynn and colleagues (1992) showed that a media campaign to discourage children's use of cigarettes had a significant effect. Campaigns to influence other forms of drug use have apparently not been evaluated despite indirect evidence that mass media can have an impact (Black 1991).

The Challenge and Opportunity of Research in Rural Communities

There are distinct challenges to developing effective programs in rural communities. These include the out-migration of families, the lack of services for families, the distances that often must be traveled by family members and interventionists alike, and the low population density of many communities. Given the size of most rural communities, political and human service leaders may hesitate to commit the resources needed to affect these communities.

Yet, there are distinct advantages to developing and evaluating community interventions on childrearing in rural communities. As elaborated elsewhere (Biglan et al., in press), conducting research in small communities makes possible randomized control trials of community interventions that would be impossible to conduct in larger communities. The relatively small sizes of these communities makes it possible to work with the entire community leadership and with local media. Further, small size may actually encourage measurement of the prevalence of youth problem behaviors because entire school populations can be assessed. Moreover, it is feasible to reach all families at risk in a given community.

Whether community interventions that are developed in rural communities will be generalizable to larger areas is, of course, a matter for empirical investigation. But, at least with respect to research on community interventions, it is appropriate to reverse the traditions of the past 50 years in which innovations have flowed primarily from urban to rural areas. In fact, what is learned in the tractable situations of rural communities could contribute greatly to the solution of the pressing problems of urban areas.

CONCLUSION

Enough is known about the factors that contribute to the success of children to begin to focus on how the numbers of successful children can be increased. Parent, peer, and school influences on child and adolescent functioning have been delineated and interventions to optimize parent, peer, and school influences show great promise. As interventions are developed for rural America, there is a choice: Focusing energies solely on developing effective ways of treating the problems of human behavior through traditional means, or embracing the more ambitious goal of reducing the incidence and prevalence of human problems. Research on community interventions to affect problem behaviors is the next logical step. Such research should investigate how previously validated interventions focused on parenting skills, family support, peer influences, and academic and social behavior in schools can be implemented in entire communities, and how the social systems of communities can be organized to enhance community support for those programs that contribute to children's success.

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In Living Context: An Interdisciplinary Approach to Rethinking Rural Prevention

Gordon Karim

INTRODUCTION: TOWARD A HOLISTIC APPROACH

This chapter argues that knowledge of two factors—local context and latest teaching and learning models—is crucial in the successful dissemination of national school-based drug and alcohol prevention programs for young people in rural areas. Successful dissemination is defined as programs that achieve their intended goals (i.e., delaying the onset of alcohol and other drug (AOD) use and abuse or remediating the use among those already using). The chapter is not a critique or evaluation of programs such as the Drug Abuse Resistance Education (DARE) program, but rather it is an attempt to understand ways in which to increase their effectiveness. Although the chapter focuses on prevention in rural areas, it speaks broadly to the field of prevention.

This chapter makes two main points:

- Local context ought to drive the design and development of prevention programs. Without taking context into account, national programs are not likely to influence local conditions. Context is essential for success. Local prevention efforts ought to be driven by sound inquiry into the local nature of substance use. Beyond a communitywide needs assessment, an ethnographic component designed to reveal how community members perceive substance use and abuse issues should be used in developing the prevention curriculum. In other words, prevention practitioners must develop an insider's understanding of drinking and drug taking in order to make the prevention message meaningful.

- The design and delivery of prevention curriculums also need to take into account current information and knowledge regarding the most effective instruction methods and ways in which young people learn best. Traditional models of education based on didactic, sage-on-the-stage principles are likely to be ineffective

> in students' learning of prevention-oriented material. Furthermore, many traditional models of education no longer conform to young persons' understanding of the world (i.e., an understanding based on observation and experience. Prevention practitioners must disseminate materials that are significant, relevant, and interesting to young people.

In conclusion, the chapter argues that the traditional prevention paradigm needs to abandon program-driven approaches (i.e., those based on risk/resiliency, risk and protective factors, self-esteem, and health models) in favor of a broad, unified, research-based understanding of substance abuse issues that is woven into an overall school reform or school improvement plan. Stand-alone programs such as DARE are doomed to fail if the bulk of the prevention responsibility is based on their successful implementation. If the problem of substance abuse is as critical as is believed, any solution must address its complex nature comprehensively.

The two points listed above are related to one another but are presented here in sequence so that there can be a better understanding of what each factor entails. The goal of this chapter is to develop a framework for reflecting the further development and dissemination of K-12 prevention programs.

Substance use and abuse among young people remains one of the top public concerns, but over the past several years prevention, as a means of remediation, has fallen from public consciousness as an important issue. This is despite the strong evidence that substance use among youth continues at basically the same rate as it did when prevention was at the top of the national agenda. It is time for those in the field of prevention to reflect and reevaluate its performance. Current prevention programming tends to be overly generalized, compensatory, planned rather than strategically fragmented, and of little relevance or meaning to young people and their lives, especially those who are at greatest risk.

In placing unreasonable expectations on programs such as DARE and the Million Dollar Machine, for example, there has been an avoidance of the harder work of understanding the social and cultural context in which substance use, abuse, and prevention take place and reforming the practice of education insofar as it is inextricable from AOD issues.

To make prevention relevant and meaningful to the youth culture, one must look to other disciplines and listen to other voices for a more holistic understanding of the issues. This chapter is interdisciplinary precisely for that reason and is based on research and theory generated outside the traditional prevention paradigm (e.g., in telecommunications, anthropology, rural sociology, and education). These fields offer both a wealth of knowledge critical to understanding substance abuse and its prevention and a unified approach to understanding the relationship between substance use, abuse, and prevention and the circumstances in which they occur.

Two assumptions undergird this chapter. The first is that the primary vehicle for education of almost any sort, including alcohol and other drug prevention, ought to be the school. The second is that prevention, and how it has been practiced to date, has for the most part fundamentally failed in changing attitudes and behaviors towards substance use and abuse.

RURAL CONTEXT: DIVERSE AND DYNAMIC

Over the past several decades, policymakers and social service providers have treated the rural as a uniform residual of the urban (Hobbs 1994). That is to say, everything that is not urban or suburban is rural by default. This dichotomy and treatment of the rural is well documented and has often been cited as a major reason for the rural policy development failures of the 1960s, 1970s, and 1980s. Just as many rural development programs exported to the developing world in the 1960s failed to consider local tradition and culture, so have many national programs failed to make a positive or significant difference in rural America.

Table 1 provides a brief inventory of some of the ways in which the rural has been conceptualized in the American mind, virtually in opposition to the urban.

Although regional and community diversity based on economic, cultural, language, religious, legal, political, demographic, ethnic, and sociological dimensions has always existed between rural places,[1] there are two reasons that rural settings have been treated uniformly: the assumption that rural communities are synonymous with small-scale agriculture, and the popular myth of the rural community as an unchanging, stable crucible of traditional American values.

The former is no longer true. Less than 1 percent of rural counties are economically dependent on small-scale farming (Focus on the Future

TABLE 1. *Typical contrasts between rural and urban.*

Urban	Rural
Heterogeneous	Homogeneous
Alienating	Communal
Economic diversity	Farm-sector dependency
Mercantile	Agrarian
Violent	Peaceful
Anonymity	Familiarity
Innovative	Traditional
Dynamic	Static
Dirty	Clean
Stressful	Relaxed

1988). As for the latter, one need only explore the ways in which popular culture has penetrated rural communities over the years.

Ironically, rural people see their own communities as fragile and fraught with urban dangers. A Roper survey conducted for the National Rural Electric Cooperative Association (NRECA) (1992) asked rural Americans what they considered to be the greatest threat to the future of rural America. An increase in crime (53 percent), alcohol abuse (52 percent), and increased use of illegal drugs (48 percent) ranked first, third, and fourth respectively. Still, most Americans have an idyllic perception of rural communities that is only now beginning to change (NRECA 1992).

The mythology about rural communities helps to explain why prevention curriculums have been either generic, "one-size-fits-all" designs, very often irrelevant to local conditions, or one generic "rural" model for all nonmetropolitan communities, as though all rural communities were the same.

Neither approach can do justice to the unique context of an individual community. As the 21st century draws near, the rural myth has become less significant because it gives little information about the people, their socioeconomic status, culture, and day-to-day lives. The only characteristics one can assume about what is rural are that these areas have relatively smaller populations and fewer resources than their nonrural counterparts.

Technological and Economic Forces

Two forces are accelerating the rate at which rural places are changing and diversifying, and, therefore, modifying the way one must think of rural prevention efforts. These are:

- Globalization; that is, changing the socioeconomic and demographic character of rural communities and redefining the relationship of place to individual identity and access to resources. Accompanying these conditions are other changes such as the increase in low-wage, service-sector jobs, a general decline in wages and earnings, and an increase in working poor families (Hobbs 1994); and

- The telecommunications revolution, which has altered the situational geography of people and place. By creating opportunities in which distance means little or nothing, telecommunications has linked the social identity of groups of people regardless of location.

These two forces have not only altered the relationships between people and places but have synchronized social innovation and change as they unfold in metropolitan and nonmetropolitan places. Increasingly, where one lives has little influence on access to social changes, be it the introduction of trends in fashion or the substance of choice. The world that shapes the lives of people in rural and urban places is converging economically and physically (Donnermeyer 1994; Karim 1994).

Rural Americans are confronting social issues (e.g., violence and gang activity) previously regarded as purely urban phenomena (Donnermeyer 1992, 1994; Edwards 1992). Whereas some of these issues have always been a part of the rural landscape, even when camouflaged by the rural myth, the rural community of today is not immune to the pressures of global economics and subsequent social change.

However, the effects of technology and economic forces on already diverse rural communities are varied and unique, depending on local traditions, social structures, history, and perception of their own identity. In other words, technological and economic changes do not culturally homogenize these communities. The changes do, however, heighten the need to understand the relationship and dynamics between the local and the global events and lifestyles.

Building an Ethnographic Understanding

National prevention programs are sometimes based on resources that are incorrect, outdated, and do not address the root causes of substance use and abuse (Bangert-Drowns 1988; Elliott 1995; Pruitt 1993; Tobler 1986). Moreover, this material often relies on fuzzy concepts such as self-esteem. Prevention programs are needed that address the issues surrounding substance use within the contexts in which it occurs. These programs should be based on solid in-context research.

Context runs deeper than what has traditionally been thought of as what a community needs assessment reveals. Prevention messages must be woven into the real lives of people instead of existing outside local experience. This suggests that those designing prevention programs need to develop an insider's perspective on at-risk behavior.

Trotter (1993) outlined a framework to be used in ethnographic inquiry for the development of culturally relevant prevention programs especially designed to reach minority groups. Ethnographic inquiry has been used in the field of substance abuse for a long time (Agar 1973*a*, 1973*b*), and its benefits in understanding human relationships and critical issues have an even longer history (Agar 1986*a*, 1986*b*; Chambers 1985; Spradley 1979, 1980; Trotter 1993; Willis 1990). Such ethnographic methods should be used to design prevention programs. Moreover, the methods should be implemented by community members themselves. The utility of Trotter's framework for developing a minority-relevant understanding of substance use is that it can be applied to the study of various groups. It is included here with some modifications. The last two points have been added to Trotter's original four (see Segal 1995).

1. Develop an insider's view regarding drinking and drug taking behavior, paying special attention to:

    a. an understanding of the situations in which use occurs;

    b. the perceived risks and benefits of use within each situation;

    c. the actual consequences of use; and

    d. both individual and group (social) barriers to changing existing behavior.

2. Develop normative data on patterns of drinking and other forms of drug-taking and at-risk behavior.

3. Determine the extent to which individual attitudes are in compliance with group culture.

4. Keep prevention and intervention goals and objectives congruent with current behavior.

5. Determine the pleasures and gratifications individuals receive from drug-taking and nondrug-taking experiences.

6. Reach an understanding of users' attitudes and beliefs about nonusers and alternatives to substance use and abuse.

In summary, each community must be willing and able to design, develop, and deliver its own prevention strategy based on self-generated local knowledge. By local knowledge is meant a rich understanding of the insider's point of view (Geertz 1983) regarding drug taking, as outlined above; the circumstances surrounding drug-taking activities; and the local environment as defined by local traditions, patterns of social behavior, beliefs, and attitudes toward drug use and nondrug-related behaviors.

To support communities, national programs must provide a sound and consistent research base that relies on a multidisciplinary understanding of the root causes, motivations, and conditions that can lead to drug taking. They must also provide a framework for local inquiry, design, and development of prevention programs and refrain from presenting packaged, predesigned curriculums.

KNOWLEDGE CONSTRUCTION AND YOUTH CULTURE

In addition to placing prevention programming within a local context, prevention curriculums ought to be designed and taught in a way that is both meaningful and engaging to those who are supposed to benefit from it. Prevention programs will have greater success if they incorporate teaching and learning principles based on current research and ways to captivate the targeted population with material that is woven into the day-to-day, out-of-the-classroom, cultural and political lives of young people.

National and local prevention programs need to borrow from current educational and social research, which offers rich insights into optimizing learning opportunities by application of appropriate teaching strategies in a classroom. Essentially, the concern is with the way in which, and the process by which, learning of any curriculum takes place. Since prevention-related messages are an intrinsic part of the educational experience, it makes perfect sense to fully use the understanding of what methods of teaching and learning work best.

The importance of targeting youth, particularly those considered at risk, cannot be overstated. Material used should be culturally and politically relevant to all aspects of their lives and based on the assertion that primary educational experiences also take place outside of the school building through the consumption of popular culture and technology (e.g., Hebdige 1979, 1988; Willis 1990). One of the main challenges of prevention programs and curriculums is to make the educational experience meaningful and engaging enough that young people will participate and learn. Most national programs rely on didactic, transmission-reception models of learning, perhaps augmented by limited experiential learning activities. Current research on teaching and learning call for an educational model that focuses on the development of higher-order thinking skills such as problemsolving, scientific inquiry, and performing complex tasks (Means et al. 1993).

The focus on higher-order thinking skills is the basis for many State and local school reform efforts and represents a movement away from outcome-based education such as test scores and memory recall (Means et al. 1993). Construction of knowledge is best accomplished through direct experience, observation, inductive and deductive reasoning, and a series of other methods that eventually lead to knowledge.

The reform movement means changing roles for students and teachers. The new role for the teacher is to facilitate the students' navigation to discovery rather than to dictate information and assert answers. The student's new role is to participate in the learning process and understand how that process takes place.

Prevention practitioners need to invent ways to build programs around authentic, challenging, and engaging tasks. A major advantage to using reform instruction is the potential to engage students characterized as "disadvantaged" or "at-risk." When students are labeled or identified in these ways, they often suffer from diminished expectations from staff, parents, and, worst of all, themselves. As a consequence, the development of advanced skills such as problemsolving, scientific inquiry, composition, and self-evaluation is thwarted by intensive drill-oriented instruction. Often they are isolated, physically and metaphorically, from the class. In most cases, these are precisely the students who stand to gain from reform instruction such as heterogeneous grouping and collaborative work.

Table 2 contrasts the learning and teaching principles of reform instruction with those of a conventional one.

TABLE 2. *Comparison of conventional and reform approaches to instruction.*

Conventional instruction	Reform instruction
Teacher directed	Student exploration
Didactic teaching	Interactive modes of instruction
Short blocks of instruction on single subject	Extended blocks of authentic and multidisciplinary work
Individual work	Collaborative work
Teacher as dispenser	Teacher as knowledge facilitator
Ability groupings	Heterogeneous groupings
Assessment of factual knowledge and discrete skills	Performance-based assessment

SOURCE: Means et al. 1993.

Whether or not this school reform movement takes hold is being observed closely by policymakers, researchers, and educators with equal interest and concern. Transforming the institution of primary education to meet the challenges of global competition and the information age has provided the impetus for the education reform movement. The argument presented here is that the way prevention and other health curriculums are taught should be the same as the way math, science, language skills, and other core curriculums should be taught in public schools. The limited success of current prevention curriculums should be enough to encourage the development of a curriculum that exercises principles of teaching and learning based on what current research shows works best.

Learning To Make Choices

Traditional transmission models of learning are at best loosely connected to the broad experiences of young people, and they are often viewed by students as authoritarian. For the young, the voice of authority is not necessarily the voice of knowledge and wisdom. Young people today have a far more sophisticated understanding of the world at an earlier age, perhaps because of telecommunications and popular culture, than did previous generations.

In large part because of the penetration of mass media and other forms of popular culture, young people are placed at greater risk—exposed to images of violence, substance use, and sex—often on a daily basis. Not only are they forced to think about critical issues such as pornography, abortion, love and morality, religion, right and wrong, what is truth, what is good, what is evil, drugs and alcohol, and other complex topics, but they are also put in positions of making difficult choices.

Children enter adolescence with questions that challenge previously held truths (Karim 1994) about the way in which the world operates. Young people understand the world as contradictory place in which truth and reality are not finite and quantifiable but ambiguous, ethereal, and elusive. While this ambiguity is often a source of personal conflict and crisis, it is at the same time collectively celebrated in forms that are alienating to adults. Popular media understand this best, and conflicting representations of right and wrong, permission and control, are reflected in advertising messages aimed at youth on television, in music, art, and films.

By not engaging adolescents in the same way as does popular culture, issues conveyed in traditional prevention messages are seen as forms of regulation and authority. Young people's understanding that knowledge is subject to time, place, context, and politics increases with age and experience. As they forge political and moral identities, prevention messages must be made relevant to their epistemological understanding of the world, as well as to the ways in which they think.

When school teachers, police officers, and other adults in the role of educating young people use the voice of absolute authority, they fail to recognize and acknowledge young people's previous knowledge of the world, built on observation and experience. Moreover, they may inadvertently undermine the effectiveness of the message they hope to deliver. Young people, who observe and experience issues related to ethical choices as difficult dilemmas, will find it odd that pure knowledge, right and wrong, exist within the classroom or any other institutional setting.

Prevention messages must recognize these factors and design and deliver materials that frame issues as choices with particular outcomes, incorporate materials and anecdotes from young people's lives, and create an interactive learning environment by encouraging debate around these issues.

CONCLUSION: SCHOOL REFORM AND PREVENTION

Over the past several years, evaluation studies of prevention programs such as DARE have found that national programs are not successful in reducing or preventing drug abuse. For example, a 3-year study commissioned by the Department of Justice concluded that DARE was successful in meeting several objectives (e.g., as raising children's self-esteem, polishing social skills, and improving attitudes towards law enforcement), but failed to meet the programmatic goals of preventing or reducing substance use and abuse among students (Elliott 1995; Pruitt 1993).

Other studies suggest that almost all school-based drug prevention programs have had little success in preventing or reducing substance use and abuse. Two separate meta-analyses were done of a total of 175 school-based prevention programs; each concluded that these prevention programs were, on the whole, ineffective in meeting their intended goals (Tobler 1986; Bangert-Drowns 1988). Tobler went so far as to advocate for their discontinuation.

Pruitt's (1993) review of school-based prevention programs and prominent meta-analyses identified the reasons for program failure. Among others, these included: (1) wasted energy and the reinvention-of-the-wheel syndrome (i.e., the recycling of an existing curriculum that was not working), (2) lack of creativity in program development (most of the curriculums out there look alike despite their established ineffectiveness), (3) inadequate research and evaluation techniques (the lack of evaluation and the poor quality of those that have been evaluated), and (4) unrealistic expectations of programs and of schools for being solely responsible for implementing them—a point that has been made by countless practitioners, researchers, and commentators of prevention programs (Lohrmann and Fors 1986). Hixson (1995) has made the point that prevention programs place yet another demand upon schools already overburdened with trying to meet educational goals and standards. Hixson argues that the primary school

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response to remediating at-risk issues is to add more programs to the daily curriculum. Programs such as DARE, It's Up To Me, Discover, and the Million Dollar Machine become yet another task teachers need to schedule. Staff, students, and administrators often respond in the same way: Here we go again!

At the same time, many of these observers recognize that the school is the environment in which young people socialize, exchange ideas with peers, find emotional support through peer and expert counseling, and connect with caring adults. Pittman and Cahill (1992) recognized the broad social role of schools as the natural site for fulfilling the needs of youth and have outlined a set of competencies that schools ought to build, ranging from citizenship and creativity to a sense of belonging.

Other writers (among them Cartwright 1993; Coontz 1992; Dryfoos 1990; Heath 1991) also argue that the responsibility of the school is broader than meeting the demands of a traditional curriculum. In their minds, schools ought to be at the center of community life, and for many at-risk students schools offer the only stable environment in their day-to-day lives (Flora et al. 1992; Hobbs 1994; Peshkin 1978) further emphasize the social importance of the school, observing that the rural school is often at the heart of the community's identity and even plays an intrinsic part in community economics and development (Hobbs 1994). This observation is based on community attitudes toward the school, empirical studies, and the effects of consolidation on community centrality or cohesiveness.

The critical point all of these scholars are making is that the school's role goes beyond the transmission of traditional subject matter and includes addressing issues of direct relevance to the lives of the youth (e.g., character-building, making moral and political choices, and developing civic responsibilities), although these issues are dealt with better by design than by default. Thus, it is the school that must contend with social issues such as substance use and abuse while meeting the challenges of school reform and education.

In a sense, school reform is being driven by both top-down and bottom-up forces. From the top down, schools must respond to the stark warning issued by Lund (1983) in "A Nation At Risk." Now more than a decade old, this report dramatized the need for educational reform to meet the demands of the 21st century workplace and global competition. From the bottom up, schools must respond to the variety of needs, pressures, and risks to which young people and the culture of youth, whether urban or rural, are increasingly exposed. Thus, it may be more constructive to think of choices about drugs and alcohol as embedded in the entire array of life choices made by youth rather than as isolated, compartmentalized, discrete choices.

On the whole, national prevention programs, as currently designed, are incongruent with both top-down and bottom-up school reform. Their future success will depend on a careful redesign, so that they fit seamlessly within the school reform framework and become meaningful and engaging for youth in the sense that they recognize and address youth as a distinct subculture.

In this context, it is clear that the program approach to prevention remains ineffective. Rather, those concerned with the prevention and remediation of alcohol and substance use must develop and deliver a curriculum that builds a quality research-based consensus regarding the root causes of substance use and abuse, develops sound instructional methods that encourage building of higher-order thinking skills, find creative ways and methods to engage students with the context and message of prevention, and design a framework that schools can use to weave the local context of substance use and abuse into standard curriculum areas.

NOTE

1. Compare the rural South with the rural Midwest, for a very broad example.

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Introduction to Mental Health Service Delivery in Rural Areas

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The following chapter, reprinted from a National Institutes of Health (NIH) publication titled "Mental Health in Rural America: 1980-1993" (Wagenfeld et al. 1994), provides an overview of the mental health services system in rural areas of the United States: its history, current status, and outlook for the future. It was selected for inclusion in this monograph because it enumerates the major categories of mental health care services available in rural areas and discusses special populations. However, it does not provide details about barriers to delivery or focus on substance abuse treatment and prevention. This introduction attempts to fill these gaps.

Although substance abuse treatment programs constitute only one category of mental health services, the categories appear to overlap. For example, Galanter and colleagues (1988) reported that over one-third of those admitted for general psychiatric care had drug abuse problems that either influenced or precipitated their current mental health status. Another study found that approximately two-thirds of those seeking admission to substance abuse treatment programs presented with evidence of an additional psychiatric problem (Ross et al. 1988). Moreover, reports of the comorbidity of depression, anxiety, phobia, and other psychiatric disorders among drug using adults are common (Helzer 1988; Regier et al. 1988; Ross et al. 1988).

Regardless of the primary diagnosis, the occurrence or co-occurrence of drug abuse and other mental health problems may be especially difficult for residents of nonmetropolitan and rural areas because availability of treatment services appears to vary with population density and proximity to urban areas. In fact, the National Association of State Alcohol and Drug Abuse Directors (Substance Abuse and Mental Health Services Administration (SAMHSA) 1994) cited rural populations as a major unmet substance abuse prevention and treatment need. Attributes of prevention and treatment services providers, clients, and the system in general contribute to this situation.

Rural areas traditionally have had difficulty in attracting and retaining psychiatrists, psychologists, and other health care professionals (Murray and Keller 1991; Mintzer et al. 1992). Lack of opportunities for continuing education and collegial support, as well as low salaries, heavy case loads, and the generalist role discourage many health care professionals from locating in rural areas. More remote locations appear to have the most difficulty in recruiting and retaining qualified personnel (Office of Technology Assessment 1990).

When substance abuse services are available, they may be located in towns that serve as regional service centers. For specialized services, such as inpatient detoxification, one may have to travel to a city. From the client standpoint, distance and lack of public transportation are major barriers to treatment utilization (Louisiana State Epidemiology Work Group 1994). Moreover, the chronic poverty status of many rural areas has resulted in residents avoiding preventive care but later seeking more costly, intensive treatment services (Mintzer et al. 1992; O'Hare and Curry-White 1992). Avoidance of services may also occur when the service is viewed as unacceptable because it departs from or challenges the local traditions, knowledge, values, or beliefs about health problems (Human and Wasem 1991). This may be especially true with regard to substance abuse treatment programs and may be intensified by lack of client choice in selecting a compatible provider or program.

The farm crisis of the 1980s and the subsequent economic problems of rural areas have exacerbated the problem of health services access and delivery in nonmetropolitan and rural areas (Doeksen et al. 1992; Murray and Keller 1991). In 1992, the uninsured rate for nonmetropolitan residents was 15.7 percent higher than the U.S. national average (National Center of Health Statistics 1994). Several factors may account for this discrepancy, including the inability of small companies typical of rural areas to offer insurance; the higher premiums charged to workers in high-risk occupations such as farming, mining, logging, and fishing; and the low incomes of many seasonal farm laborers and rural factory workers (Mintzer et al. 1992). In addition, family efforts to make ends meet during difficult economic times can involve postponing and cutting back on expenses. Health insurance and medical care are among the first expenses to be cut or postponed (Elder et al. 1994). Even those with health insurance may find that their substance abuse treatment benefits are inadequate when confronted with a for-profit mental health care system.

Finally, the dwindling tax base brought on by the depreciation of farm lands and out-migration of residents means a decrease in local funds available for the support of health, mental health, and social services (Human and Wasem 1991). Moreover, national level legislative changes in the early 1980s resulted in a shift away from a publicly supported rural community mental health system that provided multiple services to one that focuses on those with severe mental illness. Rural hospitals have been particularly hard hit. Many have and others will close as the result of financial difficulties (Office of Technology Assessment 1990). This is unfortunate for those seeking mental, as well as physical, health care because compared with urban hospitals, a much higher percentage of mental health services have been offered through rural hospitals. Replacements for these services have increasingly fallen to for-profit providers in urbanized areas.

Although public funding is still available for alcohol and drug treatment, recovery, and prevention, rural areas tend to receive only the minimum allocations (NASADAD 1994). Two reasons are cited for this situation. First, rural areas of urban States typically lack strong representation at the State level to advocate for their needs and programs. Second, rural communities generally do not have strong ties to research universities, a valuable resource in writing and implementing the evaluation components of grant applications necessary for most Federal funds. If these conditions persist, rural areas will have to become increasingly self-sufficient in handling substance abuse treatment and prevention.

The state of service access and delivery in rural areas leads to more questions than answers. Anecdotal evidence suggests that either to compensate for the lack of treatment professionals, to fill the treatment services gap left by limited National and State-level funding, or to better address the needs of special populations, some rural areas have focused their resources on holistic, 12-step type, and/or other lay-person based programs. For example, the Sobriety Movement is reported to be having great success in some Native American and Native Alaskan communities (Alaska State Epidemiology Work Group 1995); however, these successes have not been well documented. Thus, even when rural communities are proactive in developing locally based programs and services there is a continuing need for evaluation studies.

In addition to the need for evidence of program effectiveness, other basic questions need to be addressed. What percentage of all rural drug users seek treatment? What type of treatment do they want? What percentage are successful in securing treatment? How long do they wait? If treatment receipt necessitates relocation, does the temporary loss of one's home community adversely affect the immediate success of the treatment or result in higher rates of relapse? How can rural communities support members returning from treatment? Although the following chapter does not address these and similar questions, it does place rural substance abuse treatment in the broader context of mental health treatment and provides valuable information on how that system works. Answers to these questions and those prompted by the mental health services chapter provide a basis for future research.

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Mental Health Service Delivery in Rural Areas: Organizational and Clinical Issues

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The discussions of the demography, values and culture, and the prevalence of mental disorder and substance use and abuse in rural areas have provided a context for understanding some of the problems of mental health services delivery. This chapter addresses the organization and clinical issues related to the delivery of effective mental health services to rural populations.

As noted elsewhere, the myths of rural homogeneity and rural tranquility are exactly that—myths without substantive validity. Mental health professionals working in rural areas are faced with challenges associated with these myths, in addition to the challenges of underfunding, understaffing, and cultural barriers to help seeking and caregiving. The inappropriateness of the urban model of service delivery has prompted the development of models suited to the rural context. This chapter reviews some of these models developed in the past decade.

ORGANIZATIONAL CHARACTERISTICS

Organizations are reflective of the environments within which they operate. The environment for mental health care in rural areas discussed previously (Flax et al. 1979) was considerably different from today's. In 1979, the Community Mental Health Centers Act of 1963 was the vehicle through which the majority of rural mental health efforts at the community level were organized. A direct relationship between the local program and the Federal source (i.e., National Institute of Mental Health (NIMH)) was the norm (Hargrove and Melton 1987).

The Omnibus Budget Reconciliation Act of 1981 (OBRA 1981) initiated a major shift in the funding environment relating to mental health services. OBRA 19981 authorized the Alcohol, Drug Abuse and Mental Health Services Block Grant program, which shifted the direct relationship away from the Federal source of funding and to State mental health authorities. This restructuring appears to have initiated a shift in programmatic focus toward an emphasis on services to persons with serious mental illness. The initial shift to block grant funding also resulted in a 25 percent reduction in Federal support for mental health services (Andrulis and Mazade 1983).

Hargrove and Melton (1987) noted that the block grant shift, with its accompanying reduction in mental health funding, placed an increased emphasis on fee-generating services. Rural public mental health care providers, who are often the sole source of such care in rural areas, receive a majority of their funding from Medicaid fee-for-service programming (Mohatt 1992).

In summary, the major organization shifts in rural mental health service delivery in the past decade or so were significantly linked to the shifts in the funding environment. Block grant legislation removed the major link between Federal mental health authority (NIMH/Alcohol, Drug Abuse and Mental Health Administration (ADAMHA)) and local programs, and heralded a departure from the priorities of the 1963 Community Mental Health Center Act.

COMMUNITY MENTAL HEALTH CENTERS

The 1963 Community Mental Health Centers Act, strengthened by its 1975 amendments, required mental health programs to provide five core elements of service: outpatient, inpatient, consultation and education, partial hospitalization, and emergency/crisis intervention. The act also required linkages to the community and community agencies to enhance the community mental health center's ability to meet the community's needs in a responsive manner. Woy and colleagues (1981) noted that the rural community mental health center was most likely to adhere to the intent of this model.

As stated earlier, in the public mental health models, the community mental health center is usually the major source of mental health care in rural areas. Numerous articles have documented the shortage of mental health professions in rural American. This shortage of professionals has often resulted in a lack of private-sector mental health alternatives for rural residents, as well as being a major staff recruitment obstacle to the public provider.

The rural community mental health center tends to serve a large geographic area, have decentralized service delivery, require its professionals to function as generalists, and coordinate closely with other agencies (Brown and Leaf 1985; Flax et al. 1979; Hargrove and Melton 1987; Murray and Keller 1991). The last decade has seen an increasing strain placed on this pattern. As the block grant and fee-for-service shifts took hold, the rural community mental health center was forced to step away from its role as a multiservice agency accessible for general community utilization and into a narrower role of provider of services to the seriously impaired (defined by the State, rather than the community) or those able to pay.

Hargrove and Melton (1987) noted the potential for conflict as a result of the need for community mental health centers to charge fees, while most other public sector, tax-supported agencies (such as social welfare and public health agencies) do not charge fees. Additionally, community mental health centers began to focus almost exclusively on providing services reimbursable by third-party payers. The potential appears to have proven the rule, rather than the exception. For example, many have noted that the inability of the community mental health center system to proactively respond to the "farm crisis" was the result of this shift of focus and dependence upon reimbursable fee-for-service care delivery (Bergland 1988; Cecil 1988). In short, community mental health centers have become less able to respond to evolving community mental health care demands because funding mechanisms have shifted to defined problem and procedure fee-for-service reimbursement patterns.

The move away from the intent of the Community Mental Health Center Act has resulted in most community mental health centers focusing their efforts on programs mandated by the State mental health authorities and away from those defined by their local communities and catchment areas. The focus on services to the most seriously impaired, coupled with the lack of private caregiving alternatives, has created a situation in which many rural persons with less than chronic mental illness go underserved.

Many States have abandoned the model of free-standing community mental health centers and have moved toward systems of privatization and managed care. This is reflected in a 1992 proposal before the National Council of Community Mental Health Centers to remove "Community Mental Health Centers" from its title, replacing it with "Mental Healthcare Providers" or "Behavioral Healthcare Providers." Additionally, several State mental health authorities (Vermont, Ohio, Minnesota, Massachusetts, and Utah) have moved toward systems of managed care, capitated, or per-capita funding. The implications of these moves for rural areas have yet to be documented. It would seem, however, that all of these systems would require certain economies of scale that would not fit into rural population patterns.

INPATIENT SERVICES

In 1988 more than 95 percent of the most urbanized counties in major or medium-sized metropolitan areas had psychiatric inpatient services, in contrast to only 13 percent of rural counties (U.S. Congress 1988). Wagenfeld and colleagues (1988) noted that nonmetropolitan communities, which encompass 28 percent of the Nation's population, contain only 0.1 percent of the psychiatric beds. Rural populations have significantly less access to inpatient resources within their communities, and most rural residents must receive inpatient care outside of their community.

Since the inception of the 1963 Community Mental Health Center Act, which accelerated the process of deinstitutionalization, the utilization of State psychiatric facilities has declined dramatically. In Michigan, for example, the number of patients in State psychiatric hospitals has gone from 19,059 in 1960 to 2,807 in 1991 (Michigan Department of Mental Health 1991). Similar patterns exist in most other States. Although in the last decade there has been rapid growth in the number of private psychiatric beds in the United States (Redick et al. 1989), this has not been true for rural America. In 1988, the U.S. Department of Health and Human Services estimated that 61 percent of the total rural population lived in designated psychiatric shortage areas. Additionally, only 17 percent of rural general hospitals provided psychiatric emergency services, compared to 32 percent of urban hospitals (U.S. Congress 1988). This trend may be changing as rural hospitals begin to develop psychiatric beds.

Anecdotal data (Elkin, personal communication 1990; Ozarin, personal communication 1989) point to the entry of private psychiatric hospitals (e.g., Charter Hospitals, PIA) into rural areas, either as free-standing facilities or as leased beds in non-Federal general hospitals. Stuve and colleagues (1989) noted that the number of private psychiatric beds in Nebraska's nonmetropolitan areas increased form 9 to 172 from 1981 to 1988.

Because the trend is toward for-profit psychiatric bed development, however, the growth in this area may take the payer mix away from publicly funded hospitals and outpatient clinics. In the current health care financing system, where many individuals can exhaust their lifetime mental health insurance benefit quickly in a private inpatient setting, these individuals then turn to the public system without benefits or ability to pay for services (Mohatt 1992). Considerably more investigation in this area is warranted.

Studies have demonstrated several viable alternatives to provide rural residents with enhanced access to inpatient care. Miles (1980) discussed a project linking four teaching hospitals with specific underserved communities in British Columbia. The project combined psychiatric outreach for training and consultation with local physicians and allied health care professionals with 24-hour access to telephone consultation. As a result, the local general hospital was able to improve service to individuals experiencing psychiatric crises.

The Michigan legislature passed a law in 1990 that allows acute care beds in rural general hospitals to be used for 72-hour psychiatric stabilization. At this time several rural community mental health centers are negotiating cooperative agreements with general hospitals to facilitate such utilization. Paramount concerns revolve around hospital staffs' wariness of the patient with mental illness. Such wariness could most likely be reduced through training and joint staffing.

SUBSTANCE ABUSE SERVICES

Public policy concerning substance abuse services in rural settings has evolved significantly during the past three decades. In the early 1960s, drug abuse was seen to be an urban problem, and public policy focused on the urban needs. Later, in the early 1980s, drug abuse was viewed as a problem that spread, like a contagious disease, outward from the urban areas into rural American (Seidler 1989). During this period, policy-makers discussed alcohol and drug abuse primarily as separate issues. But a major change evolved in the next decade: alcohol and drug abuse were considered as part of the broader issues of chemical dependency, addiction, and substance abuse.

The research relating to the epidemiology of drug and alcohol use and abuse in rural America has been covered elsewhere (Wagenfeld et al. 1994). Little is available, however, concerning effective rural drug and alcohol use and abuse service delivery. Presenters at several annual conferences of the National Association for Rural Mental Health have discussed programs that effectively address rural substance abuse services delivery. An extensive review of the literature for this project yielded few program descriptions or evaluations.[1]

Many rural substance abuse programs seem to be based on urban models (Kutner 1982). It is important to begin addressing rural environments and values in the design and implementation of programs. Some programs have made the effort to match the delivery system to the rural environment. Beltrane (1978) describes a four-county effort in rural West Virginia, which took into account the special cultural and economic characteristics of the population to be served (i.e., individualism, isolation, religiosity, conservatism, distrust of newcomers, and economic deprivation). This project found individual- and family-based interventions more effective than traditional group approaches. The project also established strong linkages to ministerial associations.

Substance abuse prevention programming can be a special challenge in rural areas. Edwards and colleagues (1988) provided a good overview of several special considerations. As in most areas involving professional resource deployment, the staff members working in rural prevention activities have been trained in urban settings, so it is important to provide these professionals with orientation to the rural environment. Sarvela and McClendon (1987) reported the results of a comprehensive drug education program for sixth and seventh grade students in rural northern Michigan and northeastern Wisconsin.

Substance abuse is often hidden in rural areas, or at least not openly discussed, and even social drinking can be an unwelcome topic for disclosure due to the value orientation of the community. As a result of this denial, support for prevention activities may be lacking. Privacy, or the lack of privacy, is a major barrier to prevention programming, as well as to service delivery. The value orientation of the rural community population may not be congruent with those of the rural professionals. As a result, special attention must be given to "value-focus" prevention strategies. Finally, the often vast geographical distances that separate rural residents, along with low population density, make prevention and service delivery difficult.

Coordination among substance abuse, mental health, and primary health care service delivery is often poor in rural areas. Shortages of professional resources, inadequate distribution of services, and orientation into distinct service provider agencies limit the cooperation and collaboration between providers of care. The National Advisory Committee on Rural Health (1991) recommended to the Secretary of the Department of Health and

Human Services that alcohol, drug abuse, and mental health services be integrated with other primary care services in rural communities.

Much more research and evaluation is needed in this area, especially in identifying the optimal organizational and treatment aspects of rural substance abuse service delivery.

ALTERNATIVE SERVICE MODELS AND TREATMENT SETTINGS

Several models of alternative treatment and intervention for mental disorder have been shown to be effective for rural populations. Timpson (1983) described a project that effectively used indigenous residents in a remote Native American community to provide basic mental health services. The natural helpers were identified, trained by non-indigenous professionals, and provided ongoing training, supervision, and consultation.

Hollister and colleagues (1985) described similar efforts using natural helpers in rural North Carolina, through the Alternative Care Network Project. The project developed a series of workbooks entitled "Learning Experiences for People with Problems," which provided detailed processes and activities for helpers to use when working with persons with specific problems.[2]

Many of the innovative efforts reviewed used common ingredients: indigenous paraprofessionals and interagency collaboration. The trend for community mental health centers to be tied to fee-for-service delivery and staffing patterns is certainly a barrier to such innovation, because such fee-for-service care must be provided by professionally qualified staff.

Recent direct funding of rural mental health and substance abuse programming, through section 1440 programs under the Rural Crisis Recovery Act in the 1987 farm bill and the Rural Health Outreach Grant Program of the Federal Office of Rural Health Policy, has allowed for limited development of innovative alternatives without the pressures of the fee-for-service requirements.

Murray and Keller (1986) provide a good selection of articles describing alternative service models in their book "Innovations in Rural Community Mental Health." These articles cover a range of models, from linking mental health with primary health care settings to rural geriatric outreach.

CRISIS INTERVENTION AND EMERGENCY MENTAL HEALTH SERVICES

As discussed earlier, rural hospitals are less likely to formally provide psychiatric emergency services. As a result, the rural community mental health system is a major source for emergency mental health services and crisis intervention. The primary source for crisis intervention services, however, is the rural physician (Manolis 1987). Bassuk and colleagues (1984) noted that although the provision of mental health emergency services has assumed a central role in the delivery of community mental health services, the training of emergency workers has not kept pace. They described a project implemented in Vermont to train those people actually involved in routinely providing emergency care. The project targeted emergency medical technicians, law enforcement staff, emergency room staff, and community mental health center staff. The project attempted to ensure that the curriculum was specific to the local service delivery reality. A key factor in the project's success was the establishment of effective relationships between the participants and their organizations. The literature does not include many details on emergency mental health services in rural settings. It would seem that this area calls for further study.

PREVENTION

Although prevention is under attack in some quarters—the Alliance for the Mentally Ill (AMI) referred to prevention as "worrisome flakiness" (Torrey et al. 1990)—many innovative rural prevention efforts have been documented. Graham and Hill (1983) described the use of a toy lending library for at-risk populations. Their project, on remote Manitoulin Asland in Ontario, linked parents and children to child development paraprofessionals through the toy lending library. The project enriched the children's play environment, enhanced the social support of the families, allowed for identification of children at risk for developmental difficulties, and gave parents access to parenting education in a nonthreatening environment.

Bullis (1987) described a project that identified at-risk youth in the Dulce, NM Apache community. The project linked those youth with activities that enriched their personal perceptions of self-competence, social interaction skills, and problemsolving abilities. A significant reduction in risk factors (e.g., school failure, truancy, crime) was noted among the participants postintervention. Also in a Native American community, Tyler and colleagues (1982) developed a project designed to reduce the prevalence of emotional disorders through the support of indigenous agencies and natural helpers by community psychology consultation.

Stress: Country Style (Cecil 1988) was a creative response to the Nation's farming crisis. This Illinois project connected outreach mental health professionals to the farming communities in crisis, and to individual farmers and farm families. The project's proactive outreach efforts bridged the gap between those in crisis and their resistance to seeking help.

Farie and Cower (1986) described how they adapted the highly successful Primary Mental Health Project (PMHP), a program for early detection and prevention of school adjustment problems, to serve a rural population. The PMHP is structured to emphasis the following:

- Focus on primary grade children.
- Active, systematic screening for those at risk.
- Use of paraprofessional helpers.
- Using school mental health professionals as consultants and trainers for aides and teachers.

THE HEALTH AND MENTAL HEALTH LINKAGE

The primary care physician is actively involved in mental health care, providing nearly 60 percent of mental health care in the United States (U.S. Congress 1988). Yet a pattern for collaboration and cooperation between the primary health care and the mental health care sectors remains the exception rather than the rule. The review of literature for this chapter revealed very limited examination of this linkage.

Burns and colleagues (1983), in evaluating linkage programs in both urban and rural areas, found general agreement that the linkage efforts were successful. Specifically relating to rural areas, the researchers found that the direct provision of mental health and consultation services was a more effective mechanism of linkage then referrals to the mental health center. The investigators also underscored the importance of shared funding between the health and mental health centers, certain special characteristics of the linkage worker, and concern with transportation and space as factors in a successful experience. Surprisingly, no negative consequences were reported.

Two examples of successful rural linkage experiences were reported by Celenze (1988), Celenze and Fenton (1981), and Prindaville and colleagues (1983). These innovative and successful programs for the broader provision of mental health services in rural areas were, however, casualties of the general fiscal retrenchment in the human services in the early 1980s.

Several examples of successful networking, including the deployment of mental health professionals to the primary care setting, were shown to be effective (Boydston 1986; Delpizzo 1988; Flaskerud and Kviz 1982). Common advantages of this linkage were noted.

- Integration with the primary health care setting enhanced the real and perceived level of confidentiality.
- Integration leads to enhanced referrals and earlier identification of persons with mental health problems.
- Integration provides for interaction between professionals reducing the sense of professional isolation.
- Integration can reduce operational costs because some overhead expenses can be shared.

SERVICES TO SPECIAL POPULATIONS: AN OVERVIEW OF CLINICAL ISSUES

Severely Mentally Ill. As noted previously, there has been a dramatic reduction of the use of institutional-based services for persons with mental illness in the past three decades. Models of services to this population have tended to be urban in design, however, and not specifically suited for the needs and resources of rural settings (Bachrach 1982).

Baker and Intagliata (1984) reviewed case management and other community support services provided to persons with severe mental illness in rural and urban settings. They found that the range of community support services offered to rural and urban residents was about the same. The clients served, however, were dissimilar. Rural persons with serious mental illness tended to be older, female, and more likely than their urban counterparts to reside in inadequate housing.

While the literature relating to persons with severe mental illness is filled with innovative urban programs, such as Fairweather lodges, consumer-run drop-in centers and clubhouse, assertive community treatment teams, supported employment, and psychoeducational interventions to aid both recipients and families, the authors were not able to locate articles or studies of these innovations in rural communities.

Homeless Persons With Mental Illness. The review of literature found few articles relating to the issue of the delivery of services to homeless rural persons with mental illness. Sommers (1989) found rural persons with chronic mental illness had higher utilization rates for all program-based residential alternatives than their urban counterparts, while Baker and Intagliata (1984) found rural persons with chronic mental illness more likely to be living in inadequate housing than urban people with chronic mental illness.

Patton (1987) noted that homelessness in rural America has received little media or research attention. The scanty data available tend to support the notion that homelessness is a growing problem for rural areas. Homelessness among persons with mental illness is certainly an issue in rural America; but it seems that the combination of small populations and their wide dispersion results in lack of research. The special needs of rural persons who are homeless and also mentally ill or chemically dependent is a subject warranting further research and development of programs to help them.

Developmental Disabilities. Significant progress has been made in the last 30 years in the provision of services for persons with developmental disabilities. The term "developmental disability" is applied to persons who have a severe, chronic disorder (present prior to age 22) caused by mental retardation, cerebral palsy, epilepsy, or autism (Department of Health, Education, and Welfare 1971). For many of the same reasons outlined elsewhere—lack of professional resources, equipment, and facilities—rural America does not offer the person with developmental disabilities the best opportunity for meaningful community-based living and growth (Brantley and West 1980). As with persons with chronic mental illness, considerable attention has been given in the literature to urban innovations—from supported employment to community residential living and day programming. But the literature on the rural applications of such innovations is limited.

Cotten and Spirrison (1988) discussed the difficulty in providing services to older adults with developmental disabilities in rural Mississippi. They stressed the need for collaboration, outreach, and cooperation among service providers to ensure the provision of services. Menolascino and Poller (1989) noted that the life spans of persons with mental retardation have increased five-fold in recent decades. They also concluded that persons with developmental disabilities are far better being cared for within their nuclear families and in their home communities than in more restrictive settings. Some States, such as Michigan, have been innovative in the establishment of programs that support families choosing to provide family-based community living for a family member with a developmental disability.

Children and Adolescents. The mental health needs of rural children continue to be met through a patchwork of programs and agencies. Studies have frequently noted serious problems due to poor integration of services, lack of children's mental health professionals, limited access to services, and inadequate fiscal resources directed toward child and adolescent mental health (Petti and Leviton 1986). As the authors have said before, the reality of today's rural life is far from the idyllic myth so often portrayed in the media. Murray (1991) noted that the potential for rural youth to become mentally ill is equal to or in excess of their urban peers. But the research of Achenback and colleagues (1991) and Zahner and colleagues (in press), reviewed elsewhere (Wagenfeld et al. 1994), has raised questions about Murray's conclusion. Nonetheless, many at-risk populations of rural youth are unaware of the existing mental health resources available to them (Miller et al. 1982), and as a result, cannot gain access to the service planned to serve them.

The scenario of a school counselor treating a school-related behavior problem, a community mental health center involved in outpatient counseling, a court worker dealing with abuse issues, and a social service worker managing family-related issues, all with little collaboration or integration, is the rule, not the exception in the rural United States (Mohatt and Sharer-Mohatt 1990). Several programs to ensure integration have been initiated, such as NIMH's Child and Adolescent Service System Program (CASSP), but few data on rural applications (e.g., Lubrecht 1991) are currently available.

Other Special Populations. Like services for children and adolescents, services specifically intended for women, minorities, migrants, older adults, and other special populations are often not available in the rural United States (Bergland 1988). In organizing a rural minority issues research panel for the National Association for Rural Mental Health's 1991 annual conference, Murray (personal communication, April 1991) found limited numbers of researchers actively working on rural minority topics.

Women have experienced major role changes in rural America as the need for off-farm income has led many to assume employment away from the farm (Heffernan and Heffernan 1986). Similar role changes have been noted in rural mining, oil producing, and timber communities. Such role changes have had dramatic implications for families and communities across rural America, yet little programming or research attention has been directed toward this group.

Older adults are making up an increasing portion of the general population. In rural communities, however, older adults make up a disproportionate percentage of the overall population (Murray 1991). The unique aspects of rural America may affect older residents more acutely. Inadequate public transportation, limited mental health benefits, conservative value orientation, and perceived stigma can all combine to the disadvantage of rural elderly.

The Omnibus Budget Reconciliation Act of 1987 initiated a nursing home reform effort, which mandated the screening of existing and new nursing home admissions for mental illness and developmental disabilities. The law required both alternative placement and active treatment for those with significant impairment. The impact of this requirement on rural areas is not yet known.

CHALLENGES TO RURAL MENTAL HEALTH SERVICE DELIVERY FINANCING

The severe economic problems of the Nation are acknowledged by most individuals and were a major theme in the 1992 presidential election. As the economy is severely shaken from trade imbalances, savings and loan failures, auto industry plant closings, farm failures, and a national debt of unimaginable size, it is not hard to understand how rural mental health care financing can be overshadowed.

The cost of health care is consuming an ever increasing portion of the United States' gross national product (GNP). Today, approximately 12 percent of the GNP is spent on health care, more than that spent by any other industrialized nation. The cost of mental health services is included in this trend. While the debate on health care reform continues, Federal budget policy has diverted increasing amounts of revenue away from mental health services. Bergland (1988) reported that the amount of Federal revenues directed toward mental health services declined by nearly one-third from 1980 to 1987.

Escalating health care costs are spurring movement toward managed care systems in both health and mental health care (Goldman and Frank 1991). Rural America, where mental health and health have already been rationed for decades due to poor accessibility and lack of human and fiscal resources, will require special attention in implementing any managed care system.

Medicaid is a major source of public financing for services to persons with mental illness and developmental disabilities. The Medicaid system operates on a "medical model" of specialized care, which is much more adaptable to the urban environment (Mohatt 1992). Rural providers, facing chronic shortages of mental health professionals, experience great difficulty meeting the standards of the Medicaid mental health clinic service provider. For example, to be reimbursed under Medicaid, all care delivered must be ordered by a physician. As a result, although there is a shortage of physicians in rural areas, valuable physician time is used to authorize mental health providers to perform mental health procedures.

Additionally, Medicaid does not favor the use of mid-level mental health practitioners. In its review of rural mental health and substance abuse issues, the National Advisory Committee on Rural Health (1991) noted that access to care in many rural areas has been enhanced or made possible by using primary care mid-level providers (e.g., nurse practitioners, physician assistants, and nurse-midwives). The same is true in the area of rural mental health, with master's-prepared professions (psychologies, counselors, and social workers) providing many mental health services, the committee added. The advisory committee called for increased study and policy discussion in this area.

CONSUMER MOVEMENT

While groups such as the Association for Retarded Citizens (ARC), the Alliance for the Mentally Ill (AMI), the Mental Health Association (MHA), and many others have begun to play a much more significant role in advocacy across the mental health system, these groups have shown little interest in the rural environment. Consumer involvement is discussed frequently in the literature, yet its rural component is addressed only in a limited way.

SUMMARY

The mental health funding cuts and the block grant shift of the last decade have placed an increased emphasis on fee-generating services. In already underserved rural areas, this has generated immense challenges for mental health professionals on how to provide services to persons other than those with chronic mental illness. This chapter has discussed alternatives and innovations that have proven successful. Linkages with primary care physicians and indigenous residents who have been trained to provide basic mental health services under the supervision of mental health professionals are just two of the ways in which mental health professionals have risen to meet the challenges placed before them.

A review of the literature produced few articles about rural programs addressing the issues of substance abuse, services to women, children, the elderly, those with severe mental illness or developmental disability, and the homeless, or crisis intervention programs. Much work needs to be done to provide adequate services to these special rural populations. It is hoped that the renewed interest in rural areas generated by the farm crisis will produce additional programs addressing the needs of these often underserved populations.

NOTES

1. Several colleagues, in commenting on this situation, have spoken of a "fugitive literature." Some older NIDA publications (Department of Health, Education, and Welfare 1977, 1978*a*, 1978*b*) provide program descriptions. Readers with a particular interest in this area might want to contact any of the following for addition information: Office of Substance Abuse Prevention Clearinghouse, P.O. Box 2345, Rockville, MD 20847-2345, (800) 729-6686; National Association of State Alcohol and Drug Abuse Directors, 444 North Capitol Street, NW, Washington, DC 10001, (202) 783-6868; or National Rural Institute of Alcohol and Drug Abuse, c/o Arts and Sciences Outreach, University of Wisconsin, Eau Claire, WI 54702-4004, (715) 836-2031.

2. At the time of writing, these workbooks were still available from Dr. William Hollister, Department of Psychiatry, University of North Carolina, Chapel Hill, NC.

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Introduction: Drug Abuse Among Rural Ethnic and Migrant Populations

Lula A. Beatty

Drug abuse is a major health problem for minority populations in the United States. Data show that drug abuse has disproportionately severe consequences for minority populations in comparison to the white population in that they have higher morbidity and mortality from drug-related causes and are less likely to receive adequate treatment. For example, data from the Drug Abuse Warning Network (DAWN) database found that blacks and Hispanics were more likely to be treated and released from a hospital following a drug-related visit to the emergency room in comparison to whites, who were more likely to be admitted for treatment. Eradicating drug abuse and addiction in minority communities is a major national goal. The field, however, does not have the scientific database it needs to implement widespread, effective prevention intervention programs and treatment approaches that will eliminate these consequences. Overall, a broader and more rigorous knowledge base on drug abuse and addiction in racial and ethnic minority populations is needed.

In a field in which research on minority group members is very limited, much of the research that has been done has focused on those persons residing in urban areas. This can be attributed in part to the fact that the risk factors most frequently found and commonly associated with drug abuse are often more descriptive of urban minority communities. These include factors such as poverty, unemployment, low educational achievement, minority status itself, and, most consistently noted, urban residence. It is understandable, then, that when minority populations are included or are the focus of drug abuse studies, urban residents are more likely to be the target groups of the research. Other reasons, of course, account for some of this bias toward the study of urban populations. Key among them are the difficulties involved in conducting research in rural areas (e.g., transportation problems for researchers and participants, expenses involved, and proximity of the researcher to the study population) and the convenience of using urban samples.

Not enough is known about the alcohol and substance use experiences of minority/special populations in rural areas. Yet, significant numbers of African-Americans, Hispanics, Native Americans, and other racial and ethnic groups live in rural communities—on reservations, on farms, in small towns, as migrant workers—and many are likely to be having problems with substance abuse. In this section of the monograph, an overview and discussion of alcohol and drug abuse problems of rural African-Americans, Mexicans, Native Americans, and migrant workers is presented by some astute investigators. These are, of course, not the only racial and ethnic rural populations living in this country. The groups talked about here, however, do represent groups for which some data do exist and for which the need is thought to be great.

Castro and Gutierres in their chapter titled "Drug and Alcohol Use Among Rural Mexican-Americans" provide a thorough overview of the available literature on this group. Because of the paucity of research on rural Mexicans, the authors present data on substance use among Mexican youths and adults in the United States and Mexico from both rural and urban communities. In addition to some basic information on numbers of persons engaging in drinking and other substance use, Castro and Gutierres interpret these epidemiologic findings according to theories pertaining to community norms, acculturation, and gender roles. It is revealed, for example, that female Mexican-Americans in comparison to males are less likely to use alcohol. This is true in both rural and urban communities, and the authors suggest this is due to cultural expectations regarding substance use by women. However, the authors note that this finding of nonuse appears to be changing among younger Mexican-American women. The interrelationships among the variables presented and how they may differentially affect peoples' involvement in substance use according to such factors as gender, residence, and acculturation status are thoughtfully and skillfully done. Moreover, Castro and Gutierres bring clarity to a number of concepts, especially those of rural and acculturation. Definitions are given and expounded in terms of their significance for understanding alcohol and drug use in the Mexican community. For example, it is learned that rural can not be simply defined by numbers of people within an area, population density, or other environmental attributes; interpersonal characteristics (e.g., community norms and cultural expectations) and intrapersonal characteristics (e.g., individual values and attitudes) also contribute to the definition of rural. Suggestions for prevention programs are made with specific reference to the value of the life skills training approach. The authors conclude that research is needed to determine the social and psychological risk factors that lead to alcohol and substance use among rural Hispanic males and females, to examine protective factors and family traditionalism, and to gather both qualitative and quantitative data on prevention interventions.

Watson examines alcohol and drug abuse in migrant farmworkers, noting that "if we know relatively little about rural drug and alcohol use in the United States, we know even less about drug and alcohol use among migrant and seasonal farmworkers." Watson reviews the literature on migrant labor patterns in the United States, describes alcohol and drug use based on the extremely limited empirically based research literature, discusses the growing problem of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) in migrant populations, and provides policy and research recommendations. Watson reports on the ethnic diversity of the migrant populations, the majority of whom are now Hispanic, and the similarities and differences among them in terms of alcohol and drug use. For example, one study reported less drinking among Haitians in comparison to African-Americans. The influence of embeddedness in kinship groups and social isolation are factors that appear to contribute to substance use in all groups. Other risk factors include poverty, cultural and language barriers, and fear of deportation. Watson discusses the alcohol and drug use behavior and other health risk behaviors that are increasing as the face of the migrant worker population and camps changes from family groups to the preponderance of single men. Single men isolated from families are more likely to drink and use drugs and to engage in risky sexual practices. Watson documents the need for research in a number of areas, including the incidence and prevalence of alcohol and drug use and infectious diseases such as HIV in migrant populations in the three major migrant streams, the nature of multiethnic groups, and the effects of family and gender roles in the etiology of use.

Substance abuse in rural African-American populations is described by Dawkins and Williams. In reviewing the literature on alcohol and drug use among rural and urban African-Americans, the authors conclude that more research is needed, particularly on the use of illicit drugs among rural African-Americans. The available research, which has more data on alcohol use, suggests, among other findings, that drinking may be heavier among rural African-American men and that marijuana is commonly used in rural areas. Patterns of use are hypothesized to be determined by sociocultural and socioeconomic factors and gender roles. The authors suggest that the field could be advanced in some research areas by conducting secondary analyses on available data sets. They illustrate this by using the National Educational Longitudinal Studies of 1988, 1990 and 1992 to establish whether patterns of substance use among rural and urban black youth are similar. Data were available on the use of tobacco and alcohol and on perceptions of illicit drug use.

In the chapter on substance abuse prevention research among rural Native American communities, Stubben expresses alarm about the increasing use of multiple drugs among young people. Reasons for this and for substance abuse in general are explored, and Stubben outlines the various explanations, which include cultural anxiety, tribal customs, fear and anxiety, and poverty. Stubben emphasizes the heterogeneity of the Indian population and the need to understand the differences among the tribes. Most of Stubben's chapter is devoted to the discussion of effective prevention programs and findings from Project Family, a drug abuse prevention program the author has been operating with Native American families living in rural areas and reservations. Culturally competent programs are strongly advocated, and the requirements of culturally competent research and programming are discussed. Factors that can make a difference in the success of research include establishing a partnership with the community, awareness of beliefs and writing styles (exerting caution when using words such as termination, elder, eagle, and feather), language style used in surveys, and allowing funding for certain community activities. Stubben reports on experiences with Project Family and describes the adjustments that had to be made in the program to make it more appropriate and acceptable for an Indian community.

Each of the chapters offers insight into the specific needs of the particular groups under study. All of the authors come to some similar conclusions, chief among them being the overwhelming need for research with specific recommendations made on the research issues and approaches that are needed. There was also consensus on the important role that sociocultural and gender factors play in the etiology of alcohol and drug abuse. It is hoped that investigators in the field will use these chapters as guides and inspiration to pursue work that needs to be done with these populations to achieve the common goal of eradicating alcohol and drug abuse in these communities.

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Alcohol and Drug Abuse by Migrant Farmworkers: Past Research and Future Priorities

James M. Watson

If relatively little is known about drug and alcohol use in the rural United States (Edwards 1992), even less is known about such use among migrant and seasonal farmworkers. An extensive literature exists on patterns of alcohol and drug consumption, and a somewhat smaller, but still substantial, scholarly literature describes the lives of farmworkers, both migrant and nonmigrant. However, these two literatures have remained separate for historical and institutional reasons.

Alcohol use by farmworkers has been described only anecdotally within the framework of more general and often ethnographic descriptions of the lives of migrants. These studies have usually focused on the lives of migrants living in a particular migrant camp or within one of the three migrant streams (Coles 1967; Nelkin 1970). Moreover, drug use by farmworkers has been less studied than alcohol use. It is only perhaps because of the perception that human immunodeficiency virus (HIV) infection is spreading rapidly within migrant labor camps, that the question of drug abuse by migrant farmworkers has begun to receive attention.

The purpose of this chapter is to review the literature on substance abuse in migrant populations. It begins with a description of migrant farm labor patterns in the United States. The second section is a review of past research, specifically the two extant empirically based studies of migrant alcohol use. The third section describes changes in the migrant population and their use of drugs and alcohol. Following from this, Hispanic/Chicano cultural norms of appropriate alcohol consumption are reviewed. Then there is a discussion of the relationship between HIV and acquired immunodeficiency syndrome (AIDS) and migrant farmworker alcohol and drug use. The chapter concludes with suggestions for further research on migrant farmworker substance abuse as well as suggesting policy implications that are relevant to improving the health and living conditions of farmworkers.

MIGRANT LABOR IN THE UNITED STATES

Migrant farmworkers tend to follow an established pattern of travel north regardless of whether their home base is south Texas, south Florida, or California. They develop permanent relations with crew leaders and farmers and, therefore, will return year after year to the same geographic areas and may even become specialized in harvesting certain crops to the exclusion of others. In addition, migrants often travel together in groups consisting of family members, friends, and neighbors. Thus, it is both the social system of relations in which migrants are embedded and the physical and social structures they encounter on the farms in the north that shape norms and practices that then determine drinking levels.

The three different migrant streams are characterized by quite different methods of recruitment, travel, and social control by farmers, growers, and crew bosses (Trotter 1985). Migrant camps in the Eastern stream tend to recruit more single men than is typical for the other two migrant streams. The housing for the men is more often barrack-style, with shared sanitary facilities and sleeping quarters. Crew leaders provide both food and drink, and deduct the cost of meals at the end of the week from the workers' pay. The crew chief acts as the exclusive intermediary between migrant and farmer or grower, a practice that results in little, if any, direct contact between the farmworker and his employer.

Migrants are physically isolated from the nearby towns that surround the farms on which they work, have no transportation, and frequently cannot even go to local stores to buy necessities. This physical and social isolation results in a degree of dependency on crew leaders and other authority figures that ordinarily is characteristic only of total institutions such as prisons or, in the past, mental hospitals (Goffman 1961). The result is that the individual male migrant is almost completely dependent on the crew leader. Alcohol, increasingly drugs, and, in some cases, prostitution are made available and become a source of additional profit for the labor organizer or crew boss. The farmer asks only that the crops be harvested in a timely fashion at low cost.

In the Western stream, although there are often crew chiefs and occasions in which migrants working in isolated areas are exploited and taken advantage of, the migrants tend to have much more mobility than those in the Eastern stream. They often own their own cars and drive long distances from camp to camp. Migrants in the Western stream typically travel together in cohesive groups of family and friends and have more freedom to choose the farms for which they will work. Their choice is more likely to be based upon previous knowledge of the quality of the housing, the level of pay, and the general working conditions. Most important, however, is the freedom that at least some migrants in the Western stream have to leave a camp if the conditions are too onerous, including the freedom just to drive to the nearest town for a weekend shopping trip.

In the Midwestern stream more emphasis is placed on the value of longstanding relationships between farmworkers and the owners of the farms. The camps consist primarily of family groups; the presence of unattached men is relatively rare. The crew chief or *troqueo* is often a member of the same family as the farmworkers. The families have frequently established long-term relationships with growers and return year after year to the same farm. Midwestern farmers tend to discourage excessive drinking in the camps; some even prohibit all drinking. As a result, migrant worker exploitation is less likely, because any action that might destroy the level of trust that has developed over the years between employer and employee is counterproductive in both economic and human terms. Close personal and family relations tend to prevent overdependency on despotic crew chiefs or impersonal labor contractors.

MIGRANT ALCOHOL USE IN NEW YORK STATE

It is estimated that 30,000 to 40,000 migrant and seasonal farmworkers are employed on farms in western New York (Embrey, no date). Of these, very few are receiving treatment for substance abuse, and little is known about the extent and nature of their drug and alcohol use. There are only two studies that carefully quantify the extent of alcohol consumption by migrant farmworkers, and only anecdotal reports exist on the topic of drug use by migrants. The lack of research may be due to the difficulties inherent in studying migrant workers in field settings: It is hard to obtain the cooperation of farmers and crew leaders so essential to gaining entry into the camps, and workers themselves are suspicious and afraid of outsiders.

The two studies that successfully describe and quantify migrant workers' alcohol consumption patterns were conducted in the 1980s (Chi and McClain 1992; Watson et al. 1985). Data were collected by Watson and colleagues in three rural counties in western New York, and the site of Chi's study was in Orange County, New York, which is directly across the Hudson River from Westchester County.

In the western New York study, the sample included workers drawn from 13 camps and was divided between 153 African-Americans and 64 Haitians. The investigators found that drinking was widespread in the camps, especially in the evenings and on weekends. Ninety percent of the African-Americans reported drinking at least occasionally, and 90 percent also said they drank at least moderately on weekends. Seventy percent admitted drinking in the evenings on a regular basis, and 60 percent said they drank on rainy days. These results suggest a pattern of regular and accepted recreational drinking intended to fight boredom during what migrants refer to as down time when crops cannot be picked or processed.

About a fourth of the migrants reported consuming alcohol frequently and in large quantities, indicating a pattern of heavy and/or binge drinking among a minority of workers in the camps. Specifically, 22 percent indicated they drank daily, 22 percent said they regularly consumed 5 or more drinks at a single sitting, and 20 percent reported they drank more at the camps than at their home base in Florida. This group—approximately one-fifth of the sample—was categorized as heavy drinkers.

The major correlates of heavy drinking were found to include gender (men drink more than women), age (older men drink more frequently and in greater quantity than younger men), and social isolation. Social isolation was the variable that the authors of the western New York study considered the most important risk factor in alcohol consumption. Heavy and/or binge drinkers were found to be much more likely than other migrant workers to lack the support and companionship of family and friends in the camps. The importance of spouse, children, and other relatives cannot be overestimated as a moderating influence on drinking among male migrants. Specific findings that substantiate the importance of embeddedness in kinship groupings include: As the sheer number of relatives increases, alcohol consumption and trouble due to drinking decrease; and the social and physical isolation of the camps seems to increase the power and importance of the presence of wives and relatives.

Drinking patterns for Haitians were found to contrast markedly with those for African-Americans. Haitians reported drinking much less than African-Americans, and, as a result, social isolation had less effect on quantity and frequency of alcohol consumption among Haitians. Interviewers working with Haitian respondents reported that Haitian immigrants preferred the use of drugs to the consumption of alcohol for recreational use. This impression could not be confirmed, however, because the study did not gather data on drug use.

Chi's study in downstate New York, based on data from 246 migrants in 28 camps, comes to very similar conclusions as the western New York study. The ethnic mix includes 65 percent Hispanic respondents (Puerto Rican and Mexican), 13 percent black, 9 percent Jamaican, 5 percent Haitian, and 8 percent others. Chi classified, by self-report, the sample into regular drinkers, occasional drinkers, or nondrinkers. For the sample as a whole, 58 percent reported themselves to be regular drinkers, 23 percent occasional drinkers, and only 18 percent nondrinkers. Thus, 81 percent drank at least occasionally. Weekend drinking was widespread, although less so than in the western New York study. Among the regular drinkers, 52 percent regularly drank on weekends, and among the occasional drinkers, 21 percent were weekend drinkers. With regard to binge drinking, 25 percent reported drinking large quantities (more than a six-pack) at one sitting. Thus, about one-fourth of the migrants in both studies appear to engage in a pattern of heavy or binge drinking, usually during down times or on weekends. Chi's study found that men drank more than women; however, age was not associated with alcohol consumption.

Findings that are consistent with the importance of social isolation across the two studies include: Workers reported drinking greater quantities of alcohol in the camps than at home; and workers drank more frequently in the camps than at home. Chi also found Haitians tended to abstain from alcohol use and that, although 90 percent of Puerto Ricans and Mexicans and 88 percent of African-Americans were regular drinkers, only 23 percent of Haitians reported drinking regularly.

The most important and consistent finding common to both studies was the significance of the presence of family members as a restraint on excessive alcohol consumption. Chi fit a logistic regression model that included age, marital status, family members present at camp, gender, ethnic origin, parents' drinking status, years worked as farmworkers, average number of hours worked per day, whether respondents felt pressure to drink, and camp distance from a liquor store. Results demonstrated that "the social support variables of marital status and family members present at camp are highly predictive of drinking status" (Chi and McClain 1992, p. 48). Married migrants were far less likely to be regular drinkers, and migrant farmworkers who had family members living with them in the camps were also less likely to be drinkers.

CHANGES IN THE MIGRANT POPULATION

Since these studies were conducted, a major change has taken place in the composition of the farm labor force. Until recently, a large percentage of migrant farmworkers were either African-American or white, with both males and females present in the camps. In the 1990s, by contrast, farm laborers are predominantly young, male, and Hispanic. Based upon data gathered by the Department of Labor (1991), it is estimated that of the approximately 2.25 million farmworkers, 71 percent are male and 65 percent are under 35 years of age. Other statistics from the same source show that 71 percent of farmworkers are Hispanic (57 percent Mexican, 8 percent Mexican-American, and 3 percent Puerto Rican), 23 percent white, and only 2 percent African-American.

Specifically, the impression among those working to provide services to migrants today is that the agricultural community is, for strictly economic reasons, moving toward relying more and more on the employment of single, unattached males. Mechanization and rising overhead costs have reduced farmers' profit margins. And, ironically, progressive State regulations intended to promote cleaner, more sanitary, and safer housing raise the cost of new construction sufficiently so that housing families is no longer considered to be cost effective. Sleeping quarters for single men require fewer square feet per person, can be built to include shared sanitary facilities, and are easier to clean and maintain.

Thus, anecdotal reports indicate that in the Northeast, farmworkers today tend to be predominantly single, young, and male. The support and restraint that relatives or wives and children provide are absent and the result is an anomic social situation in which normal family-based rules and restraints lose their power to define the appropriate consumption level of drugs and alcohol. Drinking also increases in response to isolation of the camp environment and the resulting boredom. In an all-male environment, without variety in forms of entertainment, without social contact with townspeople, and without the opportunity for a meaningful or constructive respite from hard physical labor, alcohol and drugs can become the preferred form of amusement.

This situation is complicated by the change in the ethnic composition of the Eastern migrant stream. As African-Americans have been replaced by a predominantly Hispanic labor force, the connection between social isolation and substance abuse has taken on increasing importance. Hispanic farm workers include both documented and undocumented migrants and the ethnic mix now encompasses Chicanos, Mexicans, Puerto Ricans, Jamaicans, Haitians and, most recently, Guatemalans. Unlike African-Americans and whites, many Hispanic migrants are recent immigrants who speak little, if any, English. Due to the difficulty of entering the United States, young men often come alone, leaving their families in their country of origin.

The undocumented alien status of many Hispanic males makes them especially vulnerable to exploitation by farmers and crew bosses. For all farmworkers, but especially for undocumented aliens, debt peonage continues to be a serious problem. Workers are usually paid at the end of the week, and when crew leaders deduct for housing, food, and the alcohol sold to the worker, a migrant may finish the week owing a substantial sum to the crew boss. Thus, crew leaders are often motivated to promote rather than discourage the use of large amounts of alcohol. Because they may not be legal residents or speak English, Hispanic migrants are particularly unable to complain. The farms are often located near rural towns where workers are viewed with hostility and suspicion and repeatedly told both in action and words that the local townspeople do not want them in their communities. They are frequently subjected to harassment by local police, resulting in an even greater sense of fear and isolation.

SUBSTANCE ABUSE BY HISPANIC FARMWORKERS

Any adequate theoretical or empirical understanding of substance abuse by migrant workers must, therefore, clearly recognize and take into account the Hispanic cultural and ethnic background of many of the workers. The former emphasis on the exploitation of African-Americans and Haitians as a source of readily available low-paid labor should be supplemented by attention to the culturally standardized norms and shared understandings that surround the consumption of alcohol and the use of legal or illegal drugs by Hispanics. There is a striking lack of research focused on Hispanic migrant farmworkers, despite their growing numbers and the important contribution they make to the continued viability of American agriculture. The available literature is fragmentary and makes only the briefest mention of the specific experiences of Mexicans, Mexican-Americans, Puerto Ricans, and other Hispanic groups as they travel from farm to farm.

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Although there is no one single constellation of beliefs, norms, and behaviors associated with alcohol consumption for all Hispanics, generalizations about Mexican and Mexican-American drinking mores can be found in the literature. It should be recognized, however, that the degree of conformity to the traditional Hispanic pattern will vary with the degree of acculturation to Anglo norms, which itself will be associated with length of residence in the United States and with measures of economic status. Hispanic farmworkers, however, are often recent immigrants, are not advanced occupationally or educationally, and are, therefore, relatively unacculturated.

Mexicans and Mexican-Americans approve of the moderate consumption of alcohol when celebrating happy family events such as births, weddings, graduations, anniversaries, and christenings. Many observers have stressed the overriding importance of the family in Hispanic culture, and it is at ceremonial occasions that family members assemble with close friends to reinforce a sense of group solidarity and pride. Alcohol is viewed as one way to enhance the sociability and conviviality so essential to these symbolically important occasions. For example, one study of a large Mexican-American sample in California found that celebrating was indicated as the most important reason for drinking by three-fourths of those interviewed (Alcocer and Gilbert 1979).

Aside from the overriding importance of family and family ceremonies, the other most frequently noted aspect of Hispanic drinking norms and behavior is associated with gender. It has been frequently observed that Hispanic men consume much more alcohol and experience many more drinking-related problems than Hispanic women (Caetano 1984, 1986; Corbett et al. 1991; Gilbert 1985; Gilbert and Cervantes 1986; Maril and Zavaleta 1979). However, within the family and during family-centered parties and celebrations, male drinking is moderated and controlled by the presence of spouses and by norms regarding respectful behavior in domestic settings.

An entirely different pattern of drinking behavior has been described when Hispanic men drink together within a predominantly male environment. Many of the restraints are reduced and different norms emerge from those operative within the family setting. In a male environment, drinking involves a sharing of identities and experiences that serves to reinforce the importance of masculinity. Some have seen this response, especially among working- and lower-class African-American and Hispanic males, as an expression of machismo and have related heavy drinking to values associated with physical strength, male dominance, and sexual prowess (Neff et al. 1991).

Others (e.g., Gilbert 1985) have characterized male bonding in gender-segregated places as a function of class and occupational position. Men who work in physically demanding occupations (e.g., farm work) believe strongly that by virtue of their labor in the fields they have the right to drink after work, on the weekends, or even during work time. Drinking is a respite from the sheer physical demands and monotony of the work itself.

As Gilbert (1985) points out, under circumstances such as these, drinking becomes associated by both men and women with the provider role and is given legitimacy. A man is not considered alcoholic or deviant unless, because of his drinking, he can no longer work and hold a job. He loses his status as respected husband or father only if he no longer fulfills his role as provider—the economic mainstay of the family. As long as males drink apart from the family and drinking does not interfere with the family's everyday life, it is tolerated even when not explicitly endorsed or approved.

Hispanic cultural definitions of the use of alcohol make probable high rates of alcohol consumption in migrant camps where Hispanic males live separated from their families. The segregated all-male environment of the camps lacks the normative restraints that mothers, wives, and older relatives provide when Hispanic families celebrate together. By contrast, the hard, continuous, and physically exhausting nature of farm work brings into play norms that redefine heavy drinking as a richly deserved reward.

In the context of the migrant labor camp, excessive alcohol consumption for the Hispanic male is justified because Hispanic gender scripts require men to drink more when alone with other men and the physical difficulty of the work justifies the Friday and/or Saturday night binge at the end of a long day or long week. Whether binge or excessive drinking is explained as a function of social class or in strictly cultural terms as an expression of machismo, the result is the same: Alcohol is consumed in large enough quantities to lead to possibly serious consequences, including accidents, fights, trouble with the police, and activities that put migrants at increased risk for contracting HIV.

DRUGS, ALCOHOL, HIV, AND AIDS AMONG FARMWORKERS

The increasing presence of HIV infection and AIDS adds urgency to the problem of substance abuse in migrant and seasonal farmworker populations. Substance abuse puts farmworkers at greater risk of contracting HIV. This adds to the already known and serious consequences of overdependence on drugs and alcohol. Young men who are socially isolated not only tend to drink more but also to patronize prostitutes. This also increases the risk of contracting HIV.

Little research has been conducted on either HIV or AIDS among farmworkers. A study funded by the National Commission to Prevent Infant Mortality (NCPIM 1993), however, provides a useful overview of what is known. The study stressed three major findings: (1) Migrant and seasonal farmworkers are contracting HIV in significant numbers, and the rates of infection appear to be increasing; (2) risk or facilitating factors include sex with multiple partners, alcohol use, and both licit and illicit drug use; (3) because of isolation, fear, lack of knowledge, and language barriers, farmworkers tend not to make use of locally available medical facilities and often reject the help of medical and educational providers. These three conditions, if ignored by State and Federal authorities, could result in an explosive rise in the incidence of HIV/AIDS among farmworkers.

The NCPIM report discussed four risk factors that increase the probability of finding HIV infection in the farmworker population: sexually transmitted diseases, tuberculosis, substance abuse, and lack of knowledge about the transmission of the disease and how to protect against it. They report that rates for these four facilitating conditions are higher for farmworkers than for the overall population of the United States. With particular reference to substance abuse, the NCPIM reported, "Anecdotal sources document considerable use of chemical substances among farmworkers, particularly young adult males, stemming from loneliness, unemployment, and poverty associated with being a hired farmworker and living in a labor camp" (NCPIM 1993, p. 18).

The NCPIM report also included findings from a survey of providers from 60 farmworker service programs, drawn from each of the three migrant streams (NCPIM 1993). Nearly all providers in all three streams indicated the major reason for contracting the HIV virus was heterosexual intercourse with prostitutes and/or multiple sex partners. Over half of the providers also mentioned needle drug use as another modality for the transmission of the virus. Infected needles as the vehicle of transmission for HIV were cited most frequently by providers in the East Coast stream. These findings confirm that recreational drug use and casual sex are endemic in migrant camps, especially among young men.

When providers were asked their perception of the relative importance of facilitating factors for HIV infections, they listed risk factors in the following order of importance (percentages refer to the proportion of providers mentioning a particular factor): sexually transmitted diseases (98 percent), alcohol use (88 percent), tuberculosis (69 percent), and illicit drug use (38 percent). The importance of alcohol and drug use as contributors to the contraction and spread of HIV is underscored by these findings.

Two other studies of AIDS and HIV add significant detail to the description of the specific mechanisms that facilitate HIV transmission among farmworkers. Magana (1991) reported results of an ethnographic study of heroin-addicted prostitutes and undocumented Mexican migrant farmworkers in Orange County, California, in which it was found that the most frequent sexual activity for migrant men was with prostitutes, many of whom were HIV infected because of intravenous heroin use. These men came to the United States alone, leaving their girlfriends, wives, and families in Mexico. Magana concluded that Hispanic migrant males were at high risk for contracting the HIV virus for the same reasons as inner-city populations: poverty, minority status, involvement with prostitution and intravenous drug use, and a high incidence of other sexually transmitted diseases in addition to HIV.

The second study on HIV and AIDS among migrants was conducted in Belle Glade, Florida, a small rural town in southern Florida. Belle Glade is home base for a large number of Hispanic and African-American Eastern stream migrant workers. The countries of origin of Hispanic migrants are very diverse and include Mexico, Puerto Rico, Guatemala, Cuba, Jamaica, Nicaragua, as well as the United States in the case of Mexican-Americans (Goicoechea-Balbona and Grief 1992). Despite the diverse nationalities of these migrants, very similar findings to those of the Orange County, California, study were reported.

Goicoechea-Balbona and Grief observed that in most cases the migrant farmworkers who lived in Belle Glade were far from their native countries and from their spouses. Thus, the basic structural precondition for heavy reliance on prostitution as the main sexual outlet for younger males was reproduced in Belle Glade. Moreover, the same pattern observed among other groups of heavy use of alcohol and drugs was characteristic of the migrant population in Belle Glade.

In both the Belle Glade and Orange County studies, the risk factors were similar: poverty, limited access to medical care, a lack of health insurance, fear of deportation, fear of dismissal if they acknowledged illness, and cultural and language barriers between them and health providers. Further, the general health status of migrants in Belle Glade was poor, an additional HIV/AIDS risk factor. Both the farmworkers who live year round in Florida and those in the Eastern stream suffer from high rates of tuberculosis, venereal diseases, diarrhea, and chemical food poisoning from pesticides. Finally, Belle Glade, like Orange County, California, has become the home of large numbers of young men.

CONCLUSIONS AND RECOMMENDATIONS

Life for farmworkers in a migrant camp is a social phenomenon that can be studied for its own sake and for what it reveals about the universal characteristics and processes of human life. In addition, the lives of migrant farmworkers represent a social problem for the society as a whole, as well as for the migrants themselves. High levels of infectious disease, HIV/AIDS, substance abuse, poverty, and serious deficiencies in education, health, and housing demand an affirmative response from the wider society, both morally and pragmatically. What follows is a series of recommendations for action. The goal of this action is to gain additional knowledge about the conditions in which farmworkers live so as to make possible the development of social policy. This policy should be directed toward changing the root causes of migrant farmworker disease and deprivation.

First, very little is known about substance abuse and its consequences within the population of migrant farmworkers. Research that will yield baseline data on the incidence and prevalence of drug and alcohol use is absolutely essential for all three migrant streams. Similarly, data must be gathered nationally on the health status of migrant workers. How widespread is HIV infection? How many AIDS cases have been identified? What about other infectious disease such as tuberculosis? How sick are migrants and what are the causes? Substance abuse must be studied within a wider framework focused on the health status of farmworkers.

Second, research should have a multiethnic focus and should take into account the rapidly changing composition of the migrant workforce. The ethnic and cultural identities of farmworkers must be an additional focus for research. As persons of Hispanic national origin now constitute the majority of the migrant population, an adequate understanding of alcohol abuse should be based upon and compared to Hispanic cultural definitions of normal, culturally sanctioned alcohol use. The terms "normal," "deviant," and "abuse" are relative to culture.

The cultural identities of Hispanics vary by national origin and cannot be assumed to be culturally homogeneous (Gordon 1985). Although Puerto Ricans, Guatemalans, Dominicans, and Mexicans all speak Spanish, the meager evidence available suggests that each nationality endorses different norms to define appropriate drug and alcohol use.

Third, family and gender roles have great importance for the understanding of substance abuse and for its prevention. As has been previously discussed, drinking by young males in migrant camps is partly determined by the fact that the drinking takes place within an exclusively male setting. By contrast, the presence of family members, spouses, and relatives has been shown to dramatically moderate male drinking among south Texas Mexicans. More knowledge about gender role scripts as they play themselves out within the specific context of farm labor camps might provide crucial insight into the prevention of drug and alcohol use and the spread of HIV. It is not known whether the moderating effect of family networks on consumption is as true for other Hispanic groups as it is for Mexicans and Mexican-Americans. Moreover, nothing is known about the effect of gender scripts on "blacks," including Haitians, "black" West Indians, or African-Americans.

Fourth, participant observation, long interviews, and other soft methodologies are necessary if the dynamics of camp life are to be fully understood. Structured questionnaires are essential to gathering basic quantitative data, but it is necessary to probe more deeply to provide the proper context for the interpretation of hard data.

Fifth, it is necessary to study farm labor camps from a systems perspective. Not only do the characteristics of the farmworkers themselves need to be included, but information from growers, crew leaders, townspeople, local police, service providers, and others who have the power to shape the lives of migrant farmworkers should be gathered.

Sixth, forces in the broader society must also be included in order to understand the current circumstance of farmworkers. In the United States, the mechanization of agriculture has decreased the number of farms as the average size of farms has increased. If the integrity of the family is necessary to the emotional support of the migrant farmworker, the question is urgently raised, "What can be done to help preserve the integrity of the farmworker family despite the fundamental economic and demographic changes that have transformed American agriculture?" The physical and social health of farmworkers cannot be understood without taking into account the necessities determined by broader economic forces. The farmworker's family must no longer be defined as an economic liability, but as an economic asset instead.

Last, but not least, nationwide cooperation among researchers is urgently needed. Research is needed on the Eastern and Midwestern streams as well as on the Western stream. Attempts have been made in the field of migrant education to create a system of information sharing; the same might be done among researchers concerned with the health and welfare of migrant workers.

In 1978, the President's Commission on Mental Health (1978) warned that alcoholism was the most significant health problem among farmworkers. Today, the author would add drug abuse, the spread of HIV/AIDS, and the health effects of pesticides. Another 20 years must not go by before a strenuous effort is made to find solutions to these serious social and medical problems, which continue to plague this highly vulnerable population.

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Culturally Competent Substance Abuse Prevention Research Among Rural Native American Communities

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Substance abuse is seen as the major contributing factor to the disarray of many rural Indian communities.[1] The majority of rural Native American communities exist either within the boundaries of tribal trust lands, commonly referred to as reservations, or in close proximity to reservations; these communities are often made up of members from a common tribal population. These tribal-specific populations are very diverse in terms of cultural norms, language, and, as studies have found, in their degree of illegal drug use (Beauvais and LaBoueff 1985; May 1992; Oetting et al. 1983).

Yet, some common drug use patterns have appeared among rural Native American populations. Although alcohol abuse remains a predominant factor in rural Native American communities among both adults and young people, an increase in the use of marijuana and inhalants by youth has become evident. There is also some evidence that multidrug use among Indian youth is increasing, perhaps due to the increased availability of drugs such as cocaine, crack, and acid among reservation populations (Division of General Pediatrics and Adolescent Health (DGPAH) 1992; Jumper-Thurman 1992). Some tribal members feel that the influx of outsiders to tribal casinos has made such drugs more available to their members. Data on such tribal concerns and rural Indian drug use in general are very limited, and what does exist is often specific to one or two tribes with little or no generalizability to other rural Indian populations. An increase in such research is definitely needed.

Although substance abuse treatment programs without question offer an avenue for successful rehabilitation and sobriety for Native Americans, especially programs with a high degree of cultural competence with regard to Indian culture, spirituality, and values (Stubben 1992*a*), no treatment or rehabilitation is a substitute for substance abuse prevention within a Native American community. Substance abuse prevention in Native American communities, whether reservation, rural, or urban, is the key to overcoming substance abuse problems (Beauvais and LaBoueff 1985; May 1992).

Prevention modalities, techniques, beliefs, and values vary greatly from one Native American community to the next. Conducting prevention research on Native American populations requires a great deal of creative thinking because many of the objective empirical techniques that work well with the society-at-large may not be valid or reliable in the evaluation of Native American community-based prevention programs (Jumper-Thurman 1992; May 1986, 1992). The causes of this research dilemma center on the lack of knowledge and understanding within the substance abuse prevention research community about the diverse traditional and assimilated beliefs, practices, history, and values across Native American communities (Jumper-Thurman 1992).

Despite a strong theoretical base and initial support for culturally competent prevention programs, several important dimensions of evaluation will be required to clarify the impact of these prevention programs. First, culturally competent prevention programs for Native Americans must be submitted to a randomized, controlled efficacy study design with long-term followup evaluation to determine the impact of such programs on risk and protective factors for substance abuse problems (May 1986, 1992; Stubben 1993).

Second, although studies of the global impact of prevention programs on risk and protective factors have been conducted on Native American populations (Mail and McDonald 1980; May 1986), these must be extended to include assessments of the effectiveness of the cultural components of the programs (LaFromboise 1982; Parker et al. 1991).

Third, controlled, comprehensive measurement studies of the impact of culturally competent substance abuse prevention programs on community perspectives of drug misuse are needed. The impact of any prevention program on community viewpoints of substance misuse is a major factor for evaluating the success or failure of such a program (Flute et al. 1985; May 1986, 1992). Very little research has been conducted on how an individual community deals with the prevention of substance abuse from its own cultural perspective (Flute et al. 1985; Poor Thunder 1991; Wilson 1991).

Fourth, community-based substance abuse prevention programs for Native Americans must include the family. In the past, many Indian families were resistant to external intervention (May 1992); however, a majority of Native American families in a family-oriented prevention evaluation project indicated that such resistance may be overcome through the use of tribal interviewers and evaluators and community consultation (Stubben 1993).

Finally, the research and tribal communities must work closely together to accomplish the aforementioned and to develop culturally competent prevention programs based upon culturally relevant research findings. This means that both partners must understand and respect the other through education of researchers about tribal culture and of tribal officials about the research culture. Many tribes are requiring direct research contracts and using Indian academics as gatekeepers and overseers of such research (Stubben 1993).

The following sections will discuss reasons for Native American substance abuse, culturally competent community-based prevention and research issues, and the author's findings from a study of a family-oriented prevention evaluation process within three Native American communities. All of these offer insight into conducting research within different cultural frameworks.

REASONS FOR NATIVE AMERICAN SUBSTANCE ABUSE

Studies on levels of Native American substance abuse and reasons for such use have received a great deal of attention for many years and from a variety of people. This literature (Heindenreich 1976; Levy and Kunitz 1974; Mail and McDonald 1980; May 1977, 1982, 1986; Oetting et al. 1980, 1983) indicates that alcohol and drug use vary tremendously from one tribe to another. Some tribes have fewer substance abusers relative to the U.S. population whereas other tribes have more (May 1992). Substance abuse patterns within a tribe can also vary, as in the case of the Navajo (Topper 1985; May 1992).

Even with intertribal and intratribal variations, the majority of Indian youths, regardless of tribe, report experimentation with alcohol. Moreover, a higher percentage of Indian youths report use of marihuana than do other U.S. youths (DGPAH 1992; Edwards and Edwards 1989; Heindenreich 1976), and misuse of inhalants is a greater problem among Indian than among other U.S. youths (Jumper-Thurman 1992; May 1986).

Unfortunately, substance abuse has become a passed-down tradition in many Native American communities (Grobsmith 1989; Lex 1985).

Explanations for Indian substance abuse abound, but no single explanation can adequately account for all problems. The heterogeneity of the Indian population (tribal custom, degree of acculturation or urbanization, and geographic isolation) has hampered or precluded substance abuse surveys that permit generalizations (Lex 1985). Degree of cultural anxiety and variations in tribal customs and history have been offered as explanatory factors in the differences in drinking patterns among tribes. Historically, most rural Indian communities have had to endure a variety of Federal Government policies that varied from physical annihilation to cultural assimilation. The assimilation policies of the Federal Government (boarding schools, outlawing of tribal languages and customs) caused a high degree of cultural anxiety.

Forcing rural Indian people to live in two worlds also forces them to learn to cope in both worlds and is very stressful, particularly among the young (Nieto 1992). This pressure may also promote increased substance abuse at both the community and the individual levels (Beauvais and LaBoueff 1985; Bobo 1985; Topper 1985; Walker and Kivlahan 1984) because alcohol, tobacco, and drugs offer coping responses to such stress (Trimble et al. 1985). Within the rural Indian community, increased substance abuse is viewed as an expression of fear or anxiety concerning these external factors (Field 1962; LaFromboise and Rowe 1983; Topper 1985). Moreover, there is often a corresponding acceptance of high levels of substance abuse by the community and its leaders (Colorado 1985).

On an individual basis, the task of living in two worlds, while drawing upon the strengths and benefits of each, imposes major adaptation problems. Behavior that mainstream society deems appropriate may be viewed as undesirable according to tribal values; on the other hand, tribal values can be at odds with the expectations of non-Indians. As negative judgments of personal conduct are made by each group, substance abuse often becomes a possible solution for minimizing a growing sense of inadequacy. It provides temporary withdrawal from the frustration of being evaluated by two standards (Nofz 1988). A lack of adequate cultural and personal skills necessary to cope with these pressures increases the likelihood for alcohol and substance misuse, particularly during adolescence and the early twenties (Mail 1985).

Others attribute heavy substance abuse to deprivations such as poverty and unemployment (Dozier 1966; Ferguson 1976; Leland 1980) and to lack of control over the tribal societies as a result of paternalistic Government policy (Colorado 1985). Field (1962) and Grobsmith (1989) both found positive correlations between loosely structured (possessing a bilateral social organization) bands with permissive childrearing techniques and high levels of drunkenness. This finding has particular relevance for Plains tribes, who traditionally value autonomy and independence for youth. Such values may be maladaptive in view of the temptations to which contemporary Indian youth are exposed (Grobsmith 1989).

Knowledge of the substance abuse history and drinking patterns within a given community are essential both for conducting prevention research and developing community-based prevention programs for that community. To design a culturally competent research evaluation and/or prevention program, one must possess knowledge of the community substance abuse patterns and the history of the particular tribe under study. This history would include knowledge of the treaty relationship between the tribe and the Federal Government, boarding school experiences, and, most important, the degree to which the Federal Government played a paternal or superordinate role in determining and approving policies on virtually every dimension of tribal life, including substance abuse prevention (Jumper-Thurman 1992; May 1992; Moran 1992; Stubben 1992*b*, 1993).

ISSUES IN COMMUNITY-BASED PREVENTION AMONG RURAL NATIVE AMERICANS

Community-based prevention programs must involve the community in all aspects of the prevention process; such involvement gives the community a strong sense of program ownership (Stubben 1993). May (1992) identified a high degree of involvement among the Navajo in the development and implementation of prevention and treatment programs within communities on their reservation, which were felt to be better received by the communities than previous externally imposed programs. Jumper-Thurman (1992) offered evidence that such community involvement must also be an important component in prevention programs for urban Indians as well.

Community resources can be utilized in dealing with communication and value differences in the development and implementation of specific rural Native American prevention programs. Community members can act as cultural translators of community beliefs, norms, values, personal and tribal histories, as well as of language. Initial research from Project Family, which is discussed in the last section of this chapter, identified the crucial role of the extended family and other cultural relationships in aiding prevention program utilization. For example, what may appear as a dysfunctional family relationship from a western-oriented viewpoint (grandparent or other nonparental head of household) may be viewed from the specific tribal viewpoint as appropriate (Stubben 1993).

Community members can be valuable resources in identifying and defining value differences that exist between community members and western society and in pointing out how these differences make it difficult for the Indian person to avoid conflict in daily life and to maintain balance and harmony in his or her own life direction. Native American prevention programs must address these bicultural pressures in assessing the needs of the community because many of the prevention modalities appropriate for other populations are not appropriate for Native Americans (National Institute on Alcohol Abuse and Alcoholism (NIAAA) 1986).

For example, traditional alcoholism treatment practices such as psychological counseling and Alcoholics or Narcotics Anonymous (AA and NA) may not appeal to Native Americans because of the public disclosure of personal problems, dominant Anglo-American religious overtones, exclusion of nonalcoholics, and attempts to influence the behavior of others (Stubben 1992*a*). Tribal religious beliefs can include the use of peyote in both treatment and prevention (Aberle 1966; Hill 1990; Stubben 1992*a*). Thus, prevention components that have a strong antidrug message that does not acknowledge ceremonial use may have to be adapted to fit tribal norms (Stubben 1993).

Similarly, many of the risk indicators that have been useful in identifying potential alcohol use among youth (such as academic failure, permissive parental practices, or extreme economic deprivation) may not be useful or may have to be culturally interpreted in the prediction of substance misuse among a Native American population (Grobsmith 1989; May 1986; Medicine 1983; NIAAA 1986; Poor Thunder 1991; Stubben 1992*a*, *b*).

The problems and explanations of substance abuse among Native American people call for new approaches to prevention intervention. Conceptually, these approaches must take into account the impact of both the traditional and the modern cultures on the individual and on the use or misuse of substances (May 1986). LaFromboise (1982) asserts that alcohol and drug prevention programs for Native Americans must "blend the adaptive values and roles of both the culture in which one is raised and the culture by which one is surrounded" (p. 12). May (1986) believes that a shortcoming of many prevention programs is their inability to educate Native Americans about the social and physical impact that misuse has upon the community and that these programs must educate clients about alcohol and drug misuse through increased use of both traditional tribal and modern prevention and treatment modalities.

However, a basic concern exists as to whether such a bicultural approach is a viable option for Indian people. Biculturalism refers to dual modes of social behavior that are appropriately employed in different situations. Some believe that a functionally effective bicultural lifestyle is a myth and that those who attempt to practice it will necessarily become ineffectively stranded between two cultures (Schinke et al. 1986). They believe, for instance, that one lifestyle will necessarily replace the other (Leon 1968) or that personal preference and commitment to one lifestyle will predominate (Charleston 1980). Others, however, suggest that effective functioning in two cultures leads to greater self-actualization (Dinges et al. 1974; LaFromboise 1982; LaFromboise and Rowe 1983; May 1986).

In fact, previous research has identified that the better integrated one is into both Indian and Western society, the less susceptible one is to substance misuse. Indians who have meaningful roles in both traditional and modern cultures have the lowest susceptibility to alcohol and drug misuse. Those at highest risk for misuse are marginal to both traditional Indian and modern cultures (Ferguson 1976; French 1987; May 1982, 1986, 1992; National Institute of Mental Health (NIMH) 1986; Schinke et al. 1986).

Nieto (1992) states that "those who have reached full development in two cultures have reached a state of additive multiculturalism and enjoy cognitive advantages over monoculturals through a broader view of reality, feeling comfortable in variety of settings, and multicultural flexibility" (p. 271). Language is a key factor in additive multiculturalism, in that persons who speak two or more languages appear to operate more effectively in a multicultural system than do those who only speak one language. Wilson (1991) found this to be true among Indian children at the Loneman School on the Pine Ridge Reservation in South Dakota where children who were taught in both their tribal language (Lakota) and English did better on achievement tests than previous students who were only taught in English.

Substance abuse prevention programs face a similar dilemma. Oetting and colleagues (1989) found that prevention programs based solely on an Indian person's identification with Indian culture had only weak effects because they did not deal with external acculturation problems, such as school performance or the legal system (Oetting et al. 1989). On the other hand, in interviews, Stubben (1992*a,* 1993) found that the utilization of cultural practices, such as the sweat lodge or talking circle, improved treatment outcomes in comparison with programs that lack such cultural practices. Moreover, families that maintain such cultural practices appear to have less substance abuse than those that did not. Parker and colleagues (1991) found that cultural traditions training reduced the rate of alcohol and other drug use in a group of Indian youth in comparison to a group of Indian youth who did not receive training. Other research has shown that those prevention (and/or treatment) programs that are marginal to both Indian traditional and modern prevention modalities have the greatest chance of failure (LaFromboise and Rowe 1983; Oetting et al. 1989).

Research on incarcerated Native Americans from rural reservation communities in Minnesota, Nebraska, and South Dakota has further identified the impact of cultural factors upon sobriety. Indian inmates, the majority of whom were incarcerated for alcohol-related crimes, found sobriety through traditional practices (Grobsmith 1989; Poor Thunder 1991; Sanderson 1991). Indian inmates who had little knowledge of their ancestral traditions before incarceration, as well as inmates whose traditional practices were intact, enjoyed deep involvement in religious activities and cited this involvement as being primarily responsible for their commitment to maintaining sobriety. In many cases, gaining access to illegal substances while in prison does not pose as much of a problem as it does for youth and adults on many reservations. Those who abstained from drug and alcohol use while incarcerated stated that they were motivated to do so by a religious commitment to the "good Red Road," to "walking with the Pipe," or to "walking the Peyote Road" (Grobsmith 1989).[2] In South Dakota, the switch from AA/NA-based group meetings to "Red Road group meetings" increased the attendance of the Native American populations from 20 percent to 80 percent (Sanderson 1991).

Hall (1986) documented the effectiveness of the Sweat Lodge and Sun Dance in the prevention of substance abuse. Hill (1990) identified the preventive effectiveness of the Native American Church as did Slagle and Weibel-Orlando (1986) with the Indian Shaker Church and AA Curing Cults. These studies were limited in scope in that they focused on the influences of specific cultural practices on substance abuse. Funding for the delivery of and evaluation of alternative methods of substance abuse prevention must become a priority because many rural Native American communities either rely solely on tribally based prevention practices or make major adjustments to external prevention programs to include these practices. Thus, culturally competent prevention programs must be evaluated to prove or disprove their validity. If these prevention practices and programs are found to be effective among Native Americans, then their utilization must be increased.

As mentioned earlier, a comprehensive, long-term evaluation of the impact of culturally competent prevention programs among several rural Indian communities has yet to be conducted. The following section will offer some insights into carrying out such evaluations and the benefit of such work to both the research and Indian communities.

CULTURALLY COMPETENT COMMUNITY-BASED PREVENTION RESEARCH AMONG NATIVE AMERICANS

A major factor to be considered in evaluating culturally competent substance abuse prevention programs in rural Indian communities is that such evaluations must be conducted by culturally competent researchers. Researchers with little or no cultural knowledge may actually do more harm than good in evaluating prevention programs. Their findings may be based on incomplete or value-biased information. Thus, a true sense of the impact of such programs on the community, whether that impact is negative or positive, would be hard to achieve (Stubben 1993).

Culturally competent research requires extensive, long-term contact with the tribal community. Through such extended contact the researcher becomes familiar to and with community members, which reduces the community's view of the researcher as an outsider (Gilbert 1992; Moran 1992). Indepth knowledge of the community should be a key component of any research proposal. This knowledge must extend beyond familiarity with previous research findings and identification of the community or communities to be studied to some knowledge of the distinct language(s), cultural norms, matriarchal or patriarchal clan structures, tribal governmental history, and Federal-State-tribal relations that exist among the group(s) to be studied (Gilbert 1992; Moran 1992). Researchers who do not possess such community-specific knowledge are not culturally competent.

Another major area of concern is that the outside researcher, whether Native American or non-Indian, must recognize the effect of his or her own values and beliefs upon the research design, data-collection instruments, data collection, and even data entry and research conclusions. For example, a researcher who adheres to the health education prevention model may overlook the effects of traditional healing practices upon community-based prevention programs. Value bias is a major impediment to reliable and valid substance abuse research and evaluation (Moran 1992; Stubben 1993).

Perhaps the most effective method of dealing with value bias and value-laden research is to include members of the community in every aspect of the research. One must remember that in most cases the prevention programs in rural Native American communities have been designed or altered to fit the local beliefs, culture, norms, practices, traditions, values, language, and socioeconomic conditions of the community. Thus, research on effectiveness must involve community members in taking into account the impact of these programmatic features on substance abuse prevention. As many community members as possible should be included in each phase of research (NIMH 1986). Some rural Indian communities may require a community meeting in the initial stages of a project so researchers and community members hired by the project can introduce themselves and explain the research to the community. Community meetings can also be used to identify community members hired to assist in conducting the research and to recruit research subjects.

At the early stages of the study's development, the principal investigator should identify members of the community who possess the skills necessary to understand and evaluate the validity and reliability of the research design. Identification of community members to assist with the research must be done without academic bias. Community members without academic degrees will possess the knowledge necessary to assist with all aspects of the research design. A full partnership between the community and the researcher means that the principal investigator and the funding agency must reassess their beliefs and values, make adjustments to accommodate the beliefs and values of the community, and accept the educational creditability of community members (Stubben 1992*b*, 1993).

Two examples of value differences and value conflicts that may arise in culturally competent research are provided here. First, a similarity of knowledge, beliefs, value statements, writing style, and so forth tends to exist among culturally knowledgeable Native American and non-Indian researchers. Culturally naive researchers may not understand or pick up on aspects of cultural knowledge. Examples of these differences could include: The utilization of particular words and phases (such as termination, elder, or eagle feather), mannerisms (eye contact, body gestures) and even acknowledgment of the geographic territory (ancestral and modern) of each person's tribe (Moran 1992; Stubben 1993).

Another example involves a tribal member charged with hiring community interviewers who hired his own relatives, namely his wife and daughter. This tribal practice was in violation of the values of the researcher, the society at large, and perhaps even Federal law. However, from a community perspective the action was correct. He was following the tribal practice of taking care of one's family or clan. In this particular way his actions added validity to the research. Members of the community asked: "If one's own family is suffering, then how can that person be expected to care about the rest of the community?" They saw him as caring for the community and were therefore more open to participation in the research project (Stubben 1993). Such beliefs and values must be accommodated or else it may be very difficult, if not impossible, to collect data, and the data that is collected may be unreliable and/or invalid (Gilbert 1992; Jumper-Thurman 1992; May 1992; Moran 1992; Stubben 1992*b*).

Community members can be hired to test data-collection instruments before using them in the field, to collect data, and to code data after collection. Input by community members in these key areas of a study will offer insight into any value bias that may exist within the instruments or in the coding of the data. The latter is extremely important in regards to videotape coding, since the cultural background of the coders may either bias or add to the findings. In fact, if one is coding videotapes of Indian families, one should train and use Indian coders, preferably from the same tribal group. Besides picking up the cultural nuances that may exist in the inclusion of tribal language with English, they will be able to identify specific physical movements and verbal inflection that other coders would miss. Moreover, community members can identify aspects of the research project, materials, and process that may be offensive, misunderstood, or even irrelevant to the community (Stubben 1993).

Community members are also useful in identifying tribal leaders and elders, tribal norms on disclosure of personal information, intratribal disputes (between families, bands, and clans), intertribal relations, age and gender norms, and the degree of assimilation among tribal members; they also can set up community meetings and interviews (Moran 1992; Stubben 1992*b*, 1993). In some cases, community members may be the only ones who can act as interviewers. A group of non-Indian and Indian interviewers found that several Indian families in a school-based family survey would not answer the door to Caucasian interviewers but would for Indian interviewers (LaMere 1994).

Access to the community may actually depend on the number of community members employed as research staff. Due to their sovereign status, tribal governments can prevent a researcher from carrying out any type of research upon their tribal lands. Because the majority of rural Indians live on tribal lands, it is very important that the researcher maintain a respectful relationship with the tribal government and take their concerns seriously. Discussions with tribal officials in regards to the development, implementation, and evaluation of a culturally competent rural Native American substance abuse prevention program found concern among tribal government officials that several positions in a proposed project were to be filled by non-Indian outsiders who possessed the pertinent educational knowledge. The tribal officials felt that some of these positions could be filled by tribal members if they were given the proper training. After this concern was identified, changes were made to increase the number of tribal members employed by the project and the amount of funding for their training (Martin et al. 1995). Employment of tribal members by the research project can also improve the economic condition of a small segment of the tribe.

Although community members must be involved in all aspects of the research, not every area of the community must be involved. Therefore, research progress, including findings, problems, and conclusions, should be presented to the tribal governing body, elder councils, and other community groups in order to both inform and gather more information. Moreover, the principal investigator needs to make him or herself available to the community for informal conversations, gatherings, and meetings. Thus, if invited to any function by a community member the researcher should attend. If not invited, the researcher should stay away (Moran 1992; Stubben 1993).

Because substance abuse prevention research among rural Indian populations is limited, new research strategies may have to be developed and tested as the research progresses. Focus groups are an effective way to gather information. They can be used to test cultural competence and applicability of survey materials, interview procedures, and substance abuse prevention evaluation materials that were developed for the general population. New research materials and procedures may also be developed from community focus groups. Furthermore, different segments of the community can be interviewed through the focus group. For example, the focus group strategy can be used with groups of Indian elders, youth, parents, community leaders and mixed groups to identify differing intracommunity group viewpoints (Stubben 1993). For a discussion of the focus group process, see Krueger (1988).

Survey materials must include questions relevant to the community, both in terms of culture and understanding. Questions can be developed from the focus group process and further tested with community staff or other members of the community. Survey or interview questions that fit the norms and language of the community will offer more reliable analysis than the questions generally used in substance abuse prevention evaluation research. For example, a question that implies that peyote is an illegal drug may alienate or be misunderstood by a participant who is a member of the Native American Church. A survey on tobacco use in a rural Indian community should include questions about the use of tobacco in ceremony.

Short and direct survey statements or questions, such as "I get mad" or "Is it bad to tell a lie?" have been found to be more understandable to Native Americans than longer, less direct statements or questions (Stubben 1993; Tri-Ethnic Center 1994). A further discussion of culturally relevant survey and interview questions and techniques is found in the last section of this chapter.

Any research that is conducted in Indian communities should reward the community for its participation. Indirect costs of the community (staff time, office space, housing, community travel, utilities, knowledge, and inconvenience) should be taken into account in the research proposal.

Funding for community gatherings such as powwows, dinners (cooked and served by community members), school events, community meetings, elder meals and gatherings, giveaways, and awards, should be included in each grant application. Moreover, a portion of the computer equipment, paper, books, and other equipment purchased through grant funds should stay in the community when the research is completed.

Scholarships and mentoring funds should be a key component of each grant proposals. Both Native American and non-Indian academics should identify members of the community or other Indian persons as trainees to learn about prevention and treatment research. Trainees who want to pursue an initial academic degree or go to graduate school should be offered scholarships to the academic institution(s) that receive Office for Substance Abuse Prevention (OSAP) or NIAAA funding for prevention research among Native American communities. Mentors should also be available at these institutions for such students. Such scholarship and mentorship funding should be available (from OSAP, NIAAA) on a continuous basis for existing and future research projects.

Research projects among Native American communities are long-term commitments. One cannot learn from a Native American community unless one is willing to expend the time to learn. Future funding of prevention research projects should be for a minimum of 5 years. Funding should be available for the principal investigator(s) and co-principal investigators, who are not community, members, to either live in the community year round, with regular visits to their academic institution or extended visits in the community on a regular basis. Because some prevention research projects may require visits to more than one Native American community, funding for prolonged stays in or visits to each community is necessary.

NATIVE AMERICAN COMPONENT OF NIDA-FUNDED PROJECT FAMILY RURAL SUBSTANCE ABUSE PREVENTION EVALUATION

The previous sections of this chapter have offered insights into and recommendations for prevention program and research within rural Native American communities. The following section offers preliminary findings from the first and second years of a 4-year NIDA-funded minority supplement, Project Family. Project Family, initially funded in 1991, evaluated a theory-based, family-focused intervention entitled

Preparing for the Drug Free Years (PDY) (Hawkins et al. 1991). Designed to teach preadolescents and their parents skills that would reduce the likelihood of adolescent substance abuse problems, Project Family utilized in-home pre- and posttesting based on self-report questionnaires, videotaped family interaction sessions, and telephone surveys. It included families who received the PDY prevention program and a control group of families who did not. The family recruitment techniques utilized in PDY were also evaluated. Nearly 700 rural white Iowa families have participated.

During the first year of the minority supplement, the self-report survey materials, videotaped interviewing process, recruitment strategies, and other materials utilized in the evaluation methods of Project Family were tested with 22 Native American families, 14 of whom lived in rural areas and 10 of whom lived on reservations. Initial family interviews provided useful data in guiding the modification toward more culturally relevant evaluation instruments and methodologies. Following is a description of some initial findings.

As stated earlier, a local person is necessary for contacting families, scheduling interviews, and gathering community information for the interviewer. The contact persons for this study, mainly tribal and urban Indian drug prevention staff, and several of the participants were interested in making the assessment materials more culturally appropriate. Moreover, nearly all the participants appeared to feel that social talk was important. Informal interviews may be very valuable in gaining knowledge of the families' and community's situations and viewpoints about substance abuse prevention.

The use of community members was a key component to the success of the first year of this study; they gathered community information, contacted families to participate in the study, scheduled interviews, and offered community feedback on the study to interviewers. The five community members who assisted with the study came from two rural Indian community substance abuse programs and one urban Indian center. Both community members who assisted with the study and participating families were interested in making the assessment materials more culturally appropriate.

Socializing at community events, dinners, powwows, and other events was found to be an effective technique for recruiting families, gathering feedback on the project, and gathering further information on study techniques. These informal contacts were very valuable in supplying further knowledge of the families' and community's viewpoints and actions in regards to substance abuse prevention.

Several Native American families involved in this project expressed a preference for open-ended questions over multiple-choice items and felt that more than 30 questions was too many. As mentioned earlier, short and direct questions were also favored over long and indirect questions by the participants.

Participants suggested that questions concerning other adults in the family who perform a parenting role (grandparents, uncles, aunts, traditionally adopted relatives) should be added. In other words, the families revealed that persons other than the biological parents are normally involved in a Native American child's caretaking. Moreover, the appropriate caretaker may not be the parent(s). Rather, the appropriate caretaker may be the grandparent(s), aunt and/or uncle, other relative, or even a nonbiologically related member of the community. Thus, the researcher will need to spend time identifying the appropriate child caretaker(s) in family-oriented prevention research.

Families were also concerned about the types of questions and problem statements. Participants often felt that the questions did not reflect their family, tribe, community, or individual situation or life style. They expressed a desire for specific questions on religious practices and influences, traditional Native American childrearing practices and family processes, tribal family programs and services, tribal courts, Indian Child Welfare Act, and intertribal/interracial families. Questions that pertained to negative behavior, especially those that referred to parents or other caregivers, were seen as disrespectful of the elder status of those persons. In other words, culturally appropriate behavior constraints prevent a child from saying or writing down statements that are disrespectful of an elder, even if that elder is abusive.

The demographic sections of a survey also were found to be lacking. Native American families must include information on tribal affiliation and background(s), blood quantum, residence (reservation, near reservation/rural, near reservation/urban, or urban), and tribal knowledge level, because these are important factors in a Native American family's identity.

Another area of importance identified by both families and prevention program staff was the need to understand and cope with the time demands and scheduling problems that arise when conducting research among Native Americans. Flexibility was necessary in obtaining completed surveys and videotaped interviews. In the initial interviews, not one family completed the entire interview process in one sitting; on average, two-and-one-half meetings were required. Further, 12 of the 22 families never did complete the entire interview process or adjusted the process in such a significant manner that it no longer followed the original Project Family process. In one case, the father, although knowing that the family had an appointment for their videotaped interview at 5:00 p.m., left for a town 45 miles from his reservation community to get a new set of tires at 2:30 p.m. The interview was conducted at 7:30 p.m. after he had returned home.

Some families or family members did not show up for initial interviews, and new interviews were scheduled, while others came for the initial session and then missed later interviews. Although the families were paid for their interviews, they seldom followed the researcher's timetable. Thus, patience on the part of the researcher was necessary. In general, there was a lack of commitment to academic research by the Native Americans involved in the study. Even though the Native American communities in this project have had previous contact with academic researchers that, in most cases, had been good experiences, participants expressed several concerns about conducting such research within Native American communities:

- Who gains the most from such research, the researcher, the tribe or community, the families, or the Government?
- "Why would anyone pay for such information?" Perceptions of the Native American community in terms of the benefit of such research to the community needs to be improved. Convincing Indians that their opinions are valued by researchers and the Government agencies that fund such research should be one research goal.
- How much of an intrusion or inconvenience will there be to the individuals, families, tribes or communities involved in the research? The economic value of the interview process may not always overcome the resistance to participating in such research.

Other factors such as tribal need for such information for future funding may be more important.

- Integration equals assimilation equals annihilation—this statement was on the wall of a reservation tribal office and expresses the desire of tribal communities to maintain their cultural identity. Oftentimes, Indian communities resist participating in academic research projects because they fear that such research is an attempt to integrate their community into the larger society, whereas tribal leaders are protecting their community from annihilation through such integration. Respect for cultural identity, norms, and values is key to the development of culturally sensitive prevention evaluation.

- A favorable response came from the Native American families, prevention staff, tribal leaders, and the Indian populations with regards to the use of Indian researchers, interviewers, and other staff in conducting research in their communities. As one participant put it, "an Indian can understand us Indians better than a non-Indian because you have lived as we have and know what it is like each day to be an Indian in today's world."

The community contacts, all of whom were involved in substance abuse prevention, felt that the families would resist being videotaped. In fact, the rural and reservation families did exhibit greater anxiety when participating in the videotaped interviews than did the urban families. This is probably due to urban Indian populations' having more contact with non-Indians and being more assimilated into non-Indian society than rural and reservation Native Americans. Urban parents (grandparents or other relatives) and targets saw the videotaped interviews to be more culturally appropriate than the rural and reservation families, who expressed concerns that the videotaping was an intrusion. Moreover, payment for participation was more effective in gaining participation among the urban Indian families than the rural families. Of the 14 rural and reservation families who participated in the first year of the study, five refused to be videotaped.

Some families, other tribal members, and tribal prevention staff suggested that the researcher should first conduct videotaped interviews with tribal elders about general substance abuse issues. They believed that families whose elders would speak to such matters would be more willing to participate in the study than those whose elders would not speak. Tribal elders would know of how traditional tribal ways address such issues as substance abuse, teenage pregnancy, child abuse, divorce, dysfunctional family structures, crime (e.g., theft, murder, and assault), dropouts, suicide, and so forth. It was also suggested by community contacts that focus groups of elders, tribal leaders, youth, and other family members be recruited and utilized to evaluate the Family Project evaluation materials and techniques.

Several adjustments have been made to the Native American component of Project Family, some of which were implemented in the second year and will continue to be developed and implemented through the fourth year of the study. Second-year findings indicate that an externally developed prevention evaluation model does not accommodate the variety that exists within Native American communities and among the people who inhabit them. Native American tribes maintain their cultural differences to maintain themselves as Indians. That is why any prevention evaluation model that is solely based on the external values, beliefs, and medical practices of the non-Indian world without being adjusted or replaced by a tribally developed evaluation model will lack validity (Stubben 1993).

It has become apparent in the second year of this study that the rural Native American communities being studied needed to adjust the evaluation models, instruments, and techniques to fit their particular community. Focus group development was implemented as a means of further evaluating the survey materials and techniques of Project Family and the culturally relevant materials and techniques identified by the members of three rural Indian communities. Information gathered from these focus groups will be useful in the continued development of materials. The focus groups allow the cultural uniqueness of each rural Indian community to be identified, culturally relevant evaluation tools to be developed based upon this uniqueness, and valid and reliable data will be obtained upon which the effectiveness of rural Native American substance abuse prevention programs can be reliably evaluated (Jumper-Thurman 1992; Stubben 1993).

Even with the above concerns, most agreed that culturally relevant assessments, evaluations, materials, and techniques are necessary to increase the commitment of the Native American community to participate in substance abuse prevention research. They are also valuable in making sure that culturally valid and reliable evaluations of Native American substance abuse prevention programs are conducted.

NOTES

1. Forty-nine percent of all Native Americans lived in nonmetropolitan (rural) areas of the United States in 1990. Thus, Native Americans are the most rural population in the United States (Bureau of the Census 1992).

2. The terms "Red Road," "walking with the pipe," and "Peyote Road" are often used in the interpretation of sobriety programming to describe the difference between being drunk or sober; they characterize the difference between the two conditions without saying you must be either drunk or sober. To "walk the Red Road" is to be able to know the difference and to exist with that knowledge. Indians know the consequences of both sides and choose the way that holds the greatest appeal to them. This approach fosters individual knowledge, responsibility, and action (Robertson, no date; Grobsmith 1989).

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Substance Abuse in Rural African-American Populations

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Although alcohol and drug abuse are general problems in America, there is increasing recognition of the need to focus on special populations in which substance abuse magnifies other problems. African-Americans have been particularly vulnerable to the negative social and health consequences associated with substance abuse. For example, in comparison to whites, African-Americans experience an earlier onset of alcoholism and other drug problems, a greater likelihood of being channeled to the criminal justice system rather than to treatment for legal problems caused by substance abuse (Lowe and Alston 1973), higher rates of drug-related homicide deaths (Harper and Dawkins 1977), and a higher rate of illnesses such as liver cirrhosis and esophageal cancer (Franklin 1989). The surge in problems associated with crack cocaine use has compounded the substance abuse problem in the African-American population (Carlson and Siegal 1991).

In addressing the impact of substance abuse on African-Americans, subgroups within this special population should not be overlooked. For example, the role of substance abuse in the continuing crisis of inner cities may overshadow the need to assess the extent to which substance abuse has permeated rural areas. Yet, a substantial proportion (approximately 17 percent) of African-Americans reside in rural areas (Asante and Mattson 1991), and some indicators of community well-being suggest that rural black communities may be as vulnerable as their urban counterparts. These conditions, if left unaddressed, may exacerbate and be exacerbated by substance abuse.

Bureau of the Census figures (Lahr 1993) have shown, for example, that a higher percentage of blacks (39.5 percent) compared to whites (13.8 percent) live below the poverty line in rural areas. If a family is headed by a woman with children, the rural poverty rate increases to 50.7 percent. Not only has the condition of rural poverty persisted through the 1980s and early 1990s, there has been increasingly limited availability, access, and choice of rural health care services, particularly for southern blacks (Logan and Dawkins 1986). Population projections for African-Americans predict that "there is a real possibility, if current trends continue, that the population will flow from the northern urban communities back to the southern small towns" (Asante and Mattson 1991, p. 160). Therefore, a comprehensive approach to addressing substance abuse in the African-American population will require an understanding of the problems faced in both urban and rural settings.

The purposes of this chapter are (1) to assess the state of knowledge regarding substance abuse among African-Americans in rural areas of the United States, (2) to report preliminary findings on substance use among African-Americans in rural America based on a national longitudinal survey, and (3) to suggest current needs and future directions for research.

RESEARCH LITERATURE ON SUBSTANCE ABUSE AND RURAL BLACKS

This is not intended to be a comprehensive and exhaustive review of general research findings with regards to substance use and abuse in the African-American population. Numerous reports provide comparisons of general patterns of substance use and abuse among African-Americans and other groups. For example, the African-American population continues to report lower rates of illicit drug use, alcohol use, and smoking than whites (Bachman et al. 1991; Clark and Midanik 1982; Harford 1986; Herd 1988; Johnston et al. 1991; Novotny et al. 1988; Wallace and Bachman 1991), but more social and health problems related to substance abuse (Department of Health and Human Services (DHHS) 1991; Ronan 1987). The primary purpose of this review is to highlight findings concerning substance abuse among rural African-Americans.

Most of the research literature on substance abuse issues in the African-American population has focused on alcohol problems (see examples: Benjamin and Benjamin 1981; Caetano 1984; Dawkins 1980, 1986, 1988; Dawkins and Dawkins 1982, 1983; Dawkins and Harper 1983; Fernandes et al. 1986; Franklin 1989; Gary and Berry 1985; Harper 1980*a*, 1980*b*, 1984; Herd 1986, 1988, 1990, 1993; King 1983; Maypole and Anderson 1987; Mosley et al. 1988; Robyak et al. 1989; Watts and Wright 1983, 1988; Williams et al. 1993). However, only a small portion of that literature has produced studies of rural populations. Among these are: (1) ethnographic studies of rural black community life that describe the integration of alcohol use into the culture of rural African-Americans,

(2) studies based on community surveys of blacks and whites to determine racial differences in drinking behavior, attitudes, and problems, and (3) findings drawn from regional and national surveys that report results for regions of the country where rural blacks are concentrated (Benjamin 1976; Blazer et al. 1987; Dawkins 1976; Globetti 1967, 1970; Globetti et al. 1977; Herd 1990; Lewis 1955; Scott et al. 1992).

Ethnographic research has emphasized the sociocultural aspects of alcohol use among African-Americans in rural communities. These studies highlight cultural norms of the rural black setting that often permitted and approved of drinking behavior even though the prevailing cultural norm of the larger rural culture promoted abstinence. In a study of rural blacks in South Carolina, Lewis (1955) found that alcohol use was pervasive and heavy drinking was tolerated and even approved as long as norms of respectability such as public drunkenness were not violated. Benjamin (1976) described alcohol use among African-Americans in rural Mississippi and classified drinkers in relation to times, places, and circumstances under which light, moderate, and heavy drinking occurred. Benjamin (1976) found that the behaviors observed by Lewis (1955) more than 20 years earlier were largely unchanged. The tolerance and acceptance of abusive drinking extended to even the most respectable members of the community as long as it did not attract public attention. In describing some upper-income members of the community who were regular patrons of Sally's Place, a local gathering point for respectable blacks such as public school and junior college teachers and self-employed skilled tradesmen, Benjamin states that:

> Several of the upper-income group who frequent Sally's Place occasionally admitted that they drank too much. However, they felt that as long as they were ready to work the next day there was no problem. One can hear the respect in the persons' voices when they tell how old 'Bill' can drink several pints in one night and really 'hold class' the next morning. Everyone in the locality knows about Sally's Place but feel that the upper-income persons are maintaining their 'proper' roles as long as they drink 'out of sight' of the public (Benjamin 1976, p. 57).

Surveys of blacks and whites in rural areas have provided some evidence of similarities and differences in patterns of alcohol use and abuse between racial groups. Contrary to the assumption that alcohol use is more unrestrained among African-Americans, studies by Globetti (1967,

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1970) in Mississippi and Dawkins (1976) in North Carolina revealed few differences in alcohol use and the sociocultural factors influencing drinking between rural black and white high school students. These results are consistent with studies of racial differences in alcohol abuse in the urban setting. For example, Higgins and colleagues (1977) tested the assumption that compared to white youth the lifestyles of urban blacks would result in heavier involvement with drinking. However, they found that there was no significant difference between black and white urban teenagers. Despite the limited racial difference in drinking behavior between black and white teenagers and the traditionally lower rates of alcohol consumption in rural areas (Distilled Spirits Council of the United States, Inc. 1978; Williamson 1993), some evidence indicates that those rural African-American youth who do drink experience more problems than those who do not drink. For example, rural black youth who used alcohol were more likely to violate norms of community, home, and church (Globetti et al. 1977).

In addition, among nearly 4,000 residents of urban and rural areas of the North Carolina Piedmont, rural blacks were found to be at greater risk for alcohol abuse and dependence than other subpopulations (Blazer et al. 1987). Other evidence of alcohol-related problems among rural African-Americans comes from national survey results. Data from a major U.S. national survey of drinking patterns examined sociocultural correlates of drinking patterns for black and white males (Herd 1990). Although black men are more likely than white men to be urban dwellers, southern black men are more likely than northern black men to reside in nonurban areas. The States with the largest proportion of rural black men are located in the South. When age and income are included with race and region in subgroup comparisons of heavy drinkers, southern black men aged 30 to 59 years with incomes of $6,000 to $20,000 (middle age and middle income) displayed the highest proportion of heavy drinking among black men (Herd 1990). This rate is significantly higher than that of other subgroups of black men and twice as high as that of southern white men. Despite this finding, the overall effect of race (across all age-income subgroups) indicates that the odds of being a frequent heavy drinker are greater for whites than blacks (Herd 1990).

Although alcohol abuse in the African-American population continues to be a major concern, problems associated with the use of illicit drugs such as heroin, marijuana, and cocaine also persist. The 1988 National Household Survey on Drug Abuse (NHSDA) (National Institute on Drug Abuse (NIDA) 1990) revealed that crack cocaine smoking is more common among African-Americans and Hispanics than whites (DHHS 1991). Although African-Americans accounted for only 12 percent of those who regularly used illicit drugs in 1988, they comprise 38 percent of all drug arrests (Staples 1990). Illicit drug use is viewed as a problem that has major negative consequences for African-Americans, especially those who live in inner-city, urban communities (Dembo et al. 1985*a*, 1985*b*; Bourgois 1989; Fullilove et al. 1990; Lillie-Blanton et al. 1993). There is increasing concern that African-Americans and others who are concentrated in urban social environments may be at greater risk for the transmission of human immunodeficiency virus (HIV) infection due in part to the high level of intravenous heroin and cocaine use and the exchange of sexual favors for crack cocaine (Carlson and Siegal 1991; Day et al. 1988; Friedman 1993; Fullilove et al. 1990; Malow et al. 1993; Peterson and Bakeman 1989; Pivnick et al. 1994; Rolfs et al. 1990; Siegal 1990). Despite these concerns, little attempt has been made to examine the extent to which these problems occur in rural areas. Rather, research on illicit drug use in rural areas tends to concentrate on drug abuse related to marijuana (Goe et al. 1985; Kirk 1979; Mandel 1988; Napier et al. 1981, 1983, 1984). Evidence from some of these reports indicates that drug abuse (marijuana) is quite common among teenagers in rural areas. However, racial differences are seldom found or reported. On the other hand, national surveys continue to show that despite a decline, marijuana use continues to be a serious contributor to the drug abuse problem among teenagers, regardless of race.

DRUGS AND RURAL BLACKS: FUTURE RESEARCH NEEDS

Both large-scale surveys and small-scale ethnographic studies are needed to provide an understanding of the macrolevel and microlevel processes supporting substance abuse behavior in the black rural context. As large-scale quantitative designs, national surveys on the use of alcohol, tobacco, and other drugs have been an important means of monitoring changes in the use of licit and illicit substances as well as attitudes toward substance abuse. NIDA, the Substance Abuse and Mental Health Services Administration (SAMHSA), and the National Institute on Alcohol Abuse and Alcoholism (NIAAA) have sponsored major surveys of young people and adults that can be used to make subpopulation comparisons on the basis of characteristics such as race-ethnicity, gender, age, and region. However, less use has been made of data from national surveys sponsored by other public agencies that might be useful in gaining insight into various issues related to substance abuse. As an example, the National

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Educational Longitudinal Study (NELS) of 1988, 1990, and 1992, conducted by the Department of Educations's National Center for Educational Statistics, included substance use items that would permit examination of factors associated with drug use among young people from middle school through young adulthood (Department of Education 1993). This nationally representative sample includes data on tobacco, alcohol, marijuana, and cocaine use; involvement in drug education and counseling; disciplinary actions resulting from drug violations; and student perceptions of the impact of drugs on selected aspects of the school setting. The longitudinal design of this survey allows for the monitoring of changes in attitudes and behaviors related to specific substances. Preliminary results from NELS illustrate its potential for addressing gaps in the study of substance abuse among rural African-Americans. The 1988 sampling design was a two-stage procedure that first selected a nationally representative sample of schools containing eighth graders and then randomly sampled eighth grade students within those schools. Students were followed in 1990 and in 1992. In all, data were collected from 24,599 eighth grade students in 1,052 schools. Teachers and school administrators were also surveyed. The African-American student subsample included 3,009 respondents in the base year. Over 90 percent of the base-year respondents were surveyed in the 1990 and 1992 followups. Comparisons of African-Americans residing in rural and urban areas are made possible by the inclusion of an urbanicity measure. This measure combines the urban and suburban dwellers into one category and the rural category includes all areas outside of metropolitan statistical areas (MSAs).

One issue that can be addressed with these data is whether patterns of substance use among rural and urban blacks are similar. For example, figure 1 illustrates changes in the proportion of tobacco abstainers among rural and urban black youth. As these youth moved from middle school through high school, the proportion of nonsmokers sharply declined (from more than 90 percent to less than 50 percent) for both rural and urban blacks. This finding supports the argument that norms and values regarding substance use in the rural and urban youth subcultures are similar. The use of tobacco and alcohol data from prospective longitudinal panels permits the analysis over time of social influences such as alcohol and tobacco advertising that has targeted African-American populations for many years (Scott et al. 1992).

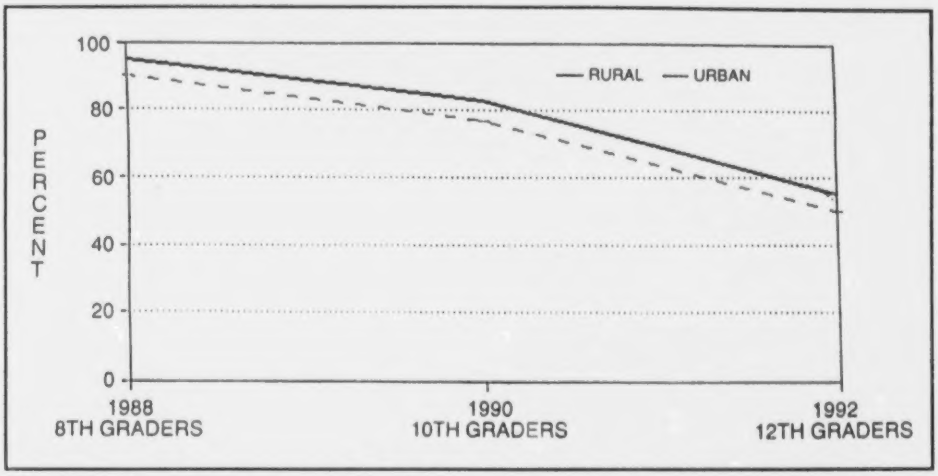

FIGURE 1. *Proportion who abstained from smoking in a national longitudinal survey of African-Americans.*

Because school is one of the primary institutions through which socialization occurs, it is important to examine the influence of this context on attitudes and behaviors that encourage substance abuse. In turn, it is important to examine the influence of substance abuse on academic advancement and other educational outcomes. It is often assumed, for example, that urban schools serving African-American youth provide a more fertile social context with regard to substance abuse than do demographically similar schools in rural areas. Data from the NELS suggest that African-Americans in rural and urban schools do differ in their perception of substance abuse as a problem in the school setting. However, as figure 2 shows, contrary to assumptions of greater consciousness of substance abuse as a problem in urban schools, African-Americans in rural schools are more likely to perceive alcohol and illegal drug use as a problem.

On the other hand, black students in urban schools are more likely to view alcohol problems and illegal drug use as major influences on students' decisions to drop out. These illustrative findings suggest that more detailed analysis of this and other data sources may provide a more comprehensive examination of substance abuse issues in this special population.

Qualitative research may also be useful in examining the impact of sociocultural factors on substance abuse at the community, family, and

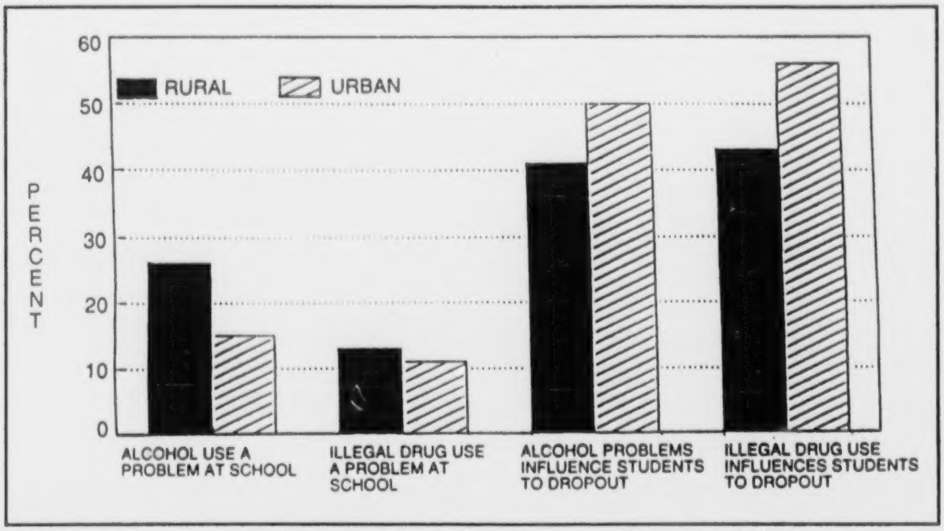

FIGURE 2. *Selected perceptions of substance abuse in the school setting among African-American youth.*

peer-group levels. In the tradition of Lewis' "Blackways of Kent" (1955) (rural setting) and Liebow's "Tally's Corner" (1967) (urban setting), direct examination of the subculture of abusers is needed to understand the factors that lead to and sustain this behavior in the rural African-American population. Such studies are needed to assist in the development of effective intervention and prevention strategies for addressing issues such as the spread of crack cocaine houses to rural settings. Ironically, the most current qualitative studies are not of rural communities where this type of research derived, but are ethnographic approaches to understanding the spread of the crack cocaine culture in urban areas (Carlson and Siegal 1991).

CONCLUSION

In summary, although this review is not exhaustive, it does point to the need for more research overall, especially studies of illicit substance abuse in rural African-American communities. The existing literature indicates that patterns of use for licit substances (alcohol and cigarettes) are either similar for rural blacks and whites or lower for blacks. However, the negative health and social consequences of smoking and abusive drinking are greater for African-Americans, and substance abuse among African-Americans, therefore, should be explained in the context of the sociocultural factors operating in the rural setting as well as sociodemographic factors, including age, sex, income and occupation. Moreover, the lack of research on the impact of recent substance abuse issues such as crack cocaine on rural black populations should make this a priority area for future research. Finally, research should go beyond comparisons of racial differences and similarities in patterns of substance abuse to an exploration of the social processes that lead to and sustain substance involvement. The preliminary data presented here indicate that, at least for tobacco use, prevalence rates among urban and rural black youth are similar. However, other aspects of substance use behavior, such as perceptions about the effects of drugs, differ across geographic location. These findings suggest that understanding the complex processes involved in the initiation and maintenance of drug use behaviors will require complex research strategies. To accomplish this goal, future research should incorporate both qualitative and quantitative methodologies. By using these strategies in conjunction with one another, a more complete picture of substance abuse in the rural African-American population will emerge.

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Drug and Alcohol Use Among Rural Mexican-Americans

Felipe G. Castro and Sara Gutierres

INTRODUCTION

The purpose of this chapter is to review the literature on drug and alcohol use among rural Mexican-Americans.[1] Given the lack of empirical data on substance use among this population, the review was expanded to include adult alcohol use in rural areas of Mexico and the United States and in urban areas of the United States. This chapter focuses on sociocultural factors (gender, community norms, family traditionalism, and acculturation) associated with drug and alcohol use among rural Mexican-Americans by presenting an integrative analysis of factors related to the risks of drug use. The interrelationship between levels of acculturation and levels of family traditionalism as they relate to the risks of drug abuse is also examined. Finally, suggestions are offered for future research and for preventive interventions applicable to rural Mexican-American populations.

URBAN-RURAL DIALECTIC

What is Rural?

As other chapters have noted, there is no consistent definition of rural. The Bureau of the Census defines rural as "not urban," with urban defined as an incorporated area with at least 2,500 population, or an area contiguous to an extended city with a population of 5,000 or more. A population density of less than 100 persons per square mile is also an indicator of rurality. Researchers studying rural populations have also varied in their definitions of rural. For example, Mata and Castillo (1986) defined rural by size of population and by the presence of an agricultural economy, whereas Chavez and colleagues (1986) included isolation as an important characteristic of their rural communities. Other studies have merely identified a community as rural, with very little information on the criteria used for the definition (Cockerham and Alster 1983; Guinn and Hurley 1976; Swanda and Kahn 1986).

Urban-Rural Contrasts

Despite variability in definitions, rurality is a concept that may be described by characteristics in three domains: environmental, interpersonal, and intrapersonal. Descriptions based on these domains tend to evoke an image of the idyllic rural setting.

From an environmental perspective and as contrasted with an urban environment, a rural environment can be described as having a lower population density; fewer buildings; fewer service facilities (such as hospitals, markets, and entertainment centers); fewer mass media outlets; and less congestion, pollution, and crime. On the surface, rural environments may appear more serene, although a deep look often reveals that they are more impoverished and isolated—conditions can that evoke stress related to deprivation or low stimulation; in urban environments, by contrast, stress may be more related to congestion and overstimulation.

The interpersonal perspective depicts rural-agrarian social relations and cultural expectations, when contrasted with those in the urban-industrial setting, as being characterized by a slower life pace where people relate to one another in a more honest, wholesome, and genuine manner. However, these close kin-like relations may also foster smalltown politics and provincial or conservative traditional community norms and expectations. In other words, privacy and anonymity may be limited in smalltown settings where everyone knows one another. Moreover, this community vigilance, coupled with strictly defined rules (social norms) for appropriate conduct and with elders' expectations that one will do what is right, may promote compliance with these expectations in some adolescents, while promoting rebellion in others.

From an intrapersonal perspective, certain personal attitudes and value orientations might prevail within a rural environment. A strong value for tradition within rural settings fosters reverence for rituals and customs, along with adherence to conservative religious norms and resistance to change and innovation. Such traditional attitudes may also be characterized by paternalism or emphasis on hierarchical social relations, including well-specified gender roles, strong family cohesion, and a present-time orientation.

Table 1 presents the idyllic characteristics of rural and urban lifestyles as examined for these three domains: environmental, interpersonal, and

TABLE 1. *Idyllic rural-urban characteristics in three domains.*

Domain	Characteristic	Rural	Urban
Environmental (What is the ecology like?)	Population density	Low	High
	Building density	Low	High
	Availability of services and products	Low	High
	Mass media	Low	High
	Congestion	Low	High
	Pollution	Low	High
	Crime	Low	High
Interpersonal (What cultural rules govern interpersonal relations?)	Life pace	Slow	Fast
	Social relations	Closer/friendly	Distant/aloof
	Social politics	Conservative, paternalistic	Liberal/nonconformist
	Community norms	Narrowly defined/restrictive	Broadly defined/permissive
	Expectations from family and others	Compliance with group norms	Personal choice
	Traditional custom and ritual	Acceptance and adherence to it	Rejection of it, seek innovation
	Gender norms	Strict and separate gender roles	Accept gender role diversity
	Norms regarding alcohol use	Men may drink, women should not	Men and women may drink
Intrapersonal (What are the individual's world view and personal preferences?)	Attitudes towards traditionalism	Value and adhere to it	Question and oppose it
	Attitudes towards modernism	Question and oppose it	Value and endorse it
	Religious-secular orientation	Strong religious	Strong secular
	Group-individual orientation	Emphasizes the group	Emphasizes the individual
	Cooperation-competition	Cooperation oriented	Competition oriented
	Attitudes towards alcohol use	Use to relate to others	Use to reward self for hard work
	Attitudes towards drug use	Drugs are not acceptable	Experimenting may be OK

intrapersonal. In summary, the environmental aspects of rural or urban living involve ecological characteristics such as population density, building density, the availability of services and products, the presence of mass media, congestion, pollution, and crime. The interpersonal aspects of rural or urban living involve cultural/community norms that govern relations between people. These characteristics include: life pace, type of social relations, conservatism in social politics, restrictiveness in community norms, expectations from family and others, values concerning traditional customs and rituals, strict gender norms, and male-oriented norms of alcohol use. The intrapersonal aspects of rural or urban living involve individual values, beliefs, attitudes, and behaviors, including attitudes about traditionalism-modernism, a religious-secular orientation, a group-individual orientation, an orientation toward cooperation-competition, and specific attitudes about drug and alcohol use.

Here it is noted that these characteristics depict the extreme poles of this rural-urban dimension, where actual communities and people will exhibit some, but not all, of the profile of characteristics depicted in this idyllic framework. Only contrasts between actual rural and urban communities that empirically examine these characteristics across all three domains will clarify whether these traits are indeed rural or urban, and whether certain rural traits are somehow protective of drug use and abuse.

For example, a study might examine whether there are lower rates of illicit drug use and abuse among Hispanic adolescents raised in Farmington, New Mexico, as compared with Puerto Rican adolescents who are raised in New York City's Spanish Harlem district. Conventional wisdom suggests that less drug availability (environmental domain), more caring personal relationships (interpersonal domain), and more conservative or religious personal attitudes (intrapersonal domain) would promote lower risks of drug involvement among rural Hispanics. However, despite this conventional wisdom, more empirical data are needed to ascertain whether simply living in a rural environment and being raised in a rural culture truly offer protection from drug use and abuse. Clearly, single-domain environmental models that describe urban-rural status solely according to global indices, such as population density, should be expanded to include cultural aspects of the urban-rural experience that is rurality, as also observed in the interpersonal and intrapersonal domains. From this trilevel perspective, a more complete grasp may be obtained of the ecological, cultural, and psychological dynamics that may influence the risks of drug use and abuse among various rural adolescents, including Mexican-Americans.

Rural Mexican-Americans

Urban-rural distinctions are particularly important among migrant populations for whom migration often proceeds from rural to urban settings. Among Mexican and Mexican-American populations, rural-to-urban migration is a frequent occurrence as indigent rural laborers often migrate to urban settings in search of better jobs (Rogler 1994). For many Mexican-Americans, migration from rural to urban settings involves exposure to stressors and acculturative changes that parallel those involved in international migration from Mexico to the United States (Rogler et al. 1991). For example, Ricardo, a young adult born and raised in the rural farming area surrounding Yuma, Arizona, may migrate 180 miles to the northeast to Phoenix, Arizona, a metropolitan area with a population of over 1 million. There he may experience urban acculturative stress in adjusting to new work and living conditions. Similarly, Ricardo's cousin, Roberto, born and raised 25 miles south of Yuma in the rural town of San Luis, Sonora, Mexico, may be exposed to similar urban acculturative stressors upon immigrating illegally to Phoenix. Being undocumented in itself constitutes a major life strain when seeking to survive in the United States. However, other life changes involved in rural-to-urban migration for Roberto and Ricardo are strikingly similar. Moreover, the extent to which Ricardo and Roberto use illicit drugs to cope with the stressors of urban living will influence their future risks of drug dependence and addiction. Despite their difference in nationality, both young adults face similar stressful conflicts: family acculturation conflicts, language-related conflicts, perceived discrimination, and identity conflicts, all of which may operate as risk factors for drug use (Vega et al. 1993*b*).

For most Hispanics/Latinos,[2] poverty is a major life strain. In 1991, 15 percent of Hispanic families with full-time workers were living in poverty, compared with 9.9 percent of African-American families and 3.9 percent of non-Hispanic white families (Perez and Martinez 1993). Here the poverty line is defined as, "a family of four with a cash income of $14,350" (Perez and Martinez 1993). Despite having a strong work ethic, many Hispanic laborers are beset by low educational attainment, labor force discrimination, and underemployment in low-wage, low-skill jobs, many of which do not offer insurance benefits. In addition, many Hispanics are employed in slow or declining-growth industries such as manufacturing, agriculture, and construction, where the risks of job loss due to economic downturns are great (Martinez 1993). Even though only a small proportion of Hispanics are rural farm laborers, Hispanics, primarily Mexicans and Mexican-Americans, are overrepresented among farmworkers, with Hispanic males and females constituting 34.0 percent and 30.3 percent of farmworkers, respectively (Martinez 1993). Thus, to be Hispanic is often to be poor, underemployed, undereducated, living in a large family, and having limited access to higher income and resources. Although living in a rural community is not always an indicator of poverty, Hispanics who live in rural settings are often among the least well off.

National demographic information shows that the majority of Hispanics living in rural areas are Mexican-Americans who reside in the Southwestern States. The percentage of the total U.S. Hispanic population living in these States is: California, 34.4 percent; Texas, 19.4 percent; Arizona, 3.1 percent; New Mexico, 2.6 percent; and Colorado, 1.9 percent (U.S. Bureau of the Census 1992). Although census data do not list the percent of Hispanics living in rural areas, the percentage of the population that is rural in the aforementioned States is: 7.4 percent in California, 19.7 percent in Texas, 12.5 percent in Arizona, 27.0 percent in New Mexico, and 17.6 percent in Colorado (U.S. Bureau of the Census 1993).

SUBSTANCE USE IN RURAL MEXICO AND THE RURAL UNITED STATES

Studies examining alcohol use in rural Mexico have consistently reported particularly heavy drinking among males (Natera 1980, 1982; Natera et al. 1983; Roizen 1983). Several ethnographic studies have examined the social context of heavy drinking among males in small Mexican towns and have concluded that alcohol availability, smalltown norms, work schedules, and interaction patterns each contribute to this pattern of alcohol consumption (Berruecos and Velasco 1977; DeWalt 1979; Fromm and Maccoby 1970; Kearney 1970; Madsen and Madsen 1979).

Specifically, heavy substance use can occur free of negative sanctions among male laborers because they live in small towns where norms condone heavy drinking, enjoy casual work schedules that allow frequent departures from the job, and belong to peer groups where alcohol consumption has been ritualized as a vehicle for male camaraderie and social bonding. Interestingly, in a study of rural males who migrated to Mexico City, this pattern was abandoned and men reported that they drank with more moderation (Lomnitz 1977). Frequent and heavy alcohol and drug use is discouraged in work settings that are deadline- and task-oriented and where peers do not ritualize daily alcohol and/or drug use. However, findings from these studies differ from those studies in the United States, which report less drinking in rural and farm areas than in urban areas (Cahalan 1975; Cahalan and Room 1974).

In contrast to the reported heavy drinking of rural Mexican men, rural Mexican women have high abstention rates (approximately 42 percent abstainers). It is interesting to note that rates of abstention for rural Mexican women have been lower than those for urban Mexican women, but are similar to those for U.S. women (approximately 42 percent abstainers). Of rural Mexican women who do consume alcohol, most are light drinkers, consuming alcohol only a few times a year, whereas drinking is a more frequent activity among U.S. women who drink (Roizen 1981, 1983).

In the United States, and perhaps even more so in Mexico, a double standard for alcohol consumption exists for women and men. Traditional Mexican norms for drinking prescribe who may drink, not how to drink. These traditional male-oriented norms dictate that children and women may not drink, but that men may and perhaps even should drink. Moreover, among some traditional Mexican males who are heavy drinkers, the ability to hold one's liquor is seen as a manly trait.

URBAN VERSUS RURAL DRUG USE AMONG MEXICAN-AMERICAN YOUTH

Currently, rates of drug use among rural Mexican-American youth are unclear. In general, school-based surveys document lower rates among Mexican-American as compared with Anglo youth, whereas surveys of inner-city youth show higher rates among Mexican-Americans (Oetting and Beauvais 1990). School-based surveys may underestimate the prevalence of Mexican-American drug use because they do not include information from school dropouts. Other studies have shown that school dropouts, relative to nondropouts, have higher levels of drug use (Bruno and Doscher 1979; Kandel 1975), and Mexican-American youth drop out of school at higher rates than do Anglo youth (Oetting and Beauvais 1990). On the other hand, studies of inner-city youth who live in segregated barrios characterized by disrupted family environments, poverty, unemployment, and deviant role models are also not representative of typical Mexican-American youth. Morales (1984) and Oetting and Beauvais (1990) have indicated that the rates of drug use among Mexican-American youth are probably similar to rates of drug use among Anglo youth, with the exception of heavier use among inner-city Mexican-American youth from the lowest socioeconomic groups.

In general, research on drug use in rural or nonmetropolitan areas has found that rural adolescents report low rates of substance use (Gutierres, unpublished data; Johnston et al. 1987; Kandel et al. 1976; Robertson 1994). Data from the 1992 National Household Survey show that rates of illicit drug use (use past year and use past week) were higher in the large metro (population of one million or more) and small metro (population of 50,000 to 999,999) areas as compared with nonmetro areas (small communities, rural, nonfarm areas with populations below 50,000). Reported lifetime use among rural youth, while lower relative to use among small metro area youth, was somewhat higher than for youth who live in large metro areas. Interestingly, an inverse relationship in rates of use (lifetime, past year, and past week) by urban-rural status has been observed for cigarette smoking, where smoking rates were highest in the rural areas and lowest in large metro areas (National Institute on Drug Abuse 1990).

Another study, the American Drug and Alcohol Survey, examined lifetime prevalence and past month prevalence rates of drug use in rural small towns (populations of 2,500 or less), rural larger towns (populations from 2,500 to 10,000), and nonrural moderate-sized urban communities (populations of 10,000 to 50,000); large metropolitan areas were not represented in this sample (Peters et al. 1992). These investigators found that among eighth graders, for 12 of the 13 drugs examined, including alcohol and cigarettes, the lowest lifetime prevalence rates were observed in the rural small towns. By 12th grade, however, the lowest lifetime prevalence rates were observed in the small towns for only six drugs. These authors suggest that the rural small community environment may have a protective effect for younger children, but the effect may begin to disappear as these rural youth enter adolescence and associate with new peers. The protective isolation that rural communities enjoyed in the past may be changing as mass media and enhanced modes of transportation now offer rural youth exposure to urban fads and lifestyles, including new drug fads, almost contemporaneously with their emergence in metropolitan areas.

The few studies that have examined drug use among rural Mexican-American youth have produced inconsistent results. Guinn and Hurley (1976) compared rural Texas youth with an urban Houston sample and found comparable rates of alcohol use but lower rates of drug use (marijuana, stimulants, barbiturates, hallucinogens, solvents, and opiates) in the rural sample. Cockerham and Alster (1983) found that, compared to a demographically matched sample of Anglo youth, rural Mexican-American youth used marijuana more extensively and had more positive attitudes toward marijuana use. Finally, Chavez and colleagues (1986) found that, compared to a national sample, 7th to 12th grade Mexican-American youth from a rural southwestern town reported a greater use of alcohol, uppers, tranquilizers, and heroin. Surprisingly, in the study by Chavez and colleagues, the high drug use rates among the Mexican-Americans were primarily influenced by use among females. These authors suggested several possible explanations for this pattern of results, including a differential sex/school dropout rate that could influence the data; dating patterns of young Mexican-American females who may be emulating the drug-taking behavior of older Mexican-American males; or the fact that young females may be directly rebelling against the marianismo stereotype, the image of Mexican females as docile, chaste, and motherly.

The idea that drug-using women from conventional families suffer more for their nonconformity is supported by data for urban heroin-using Chicanas from lower class barrios in East Los Angeles (Moore 1990). Relative to these "cholas," young women from multigenerational drug-using families, heroin-using young women who rebelled against their conventional (traditional) Mexican families were more likely to become street addicts, to have a relationship with an abusive man, and to lack the system of family support available to the cholas. That is, cholas were comparatively less deviant, lived in more organized environments, were less dependent on male partners, had a head start on street life, and, despite their use of heroin, benefited from the social support of family and gang members. Further research is needed to understand how a traditional family environment may inspire conformity among some Mexican-American/Chicana women, while inducing rebellion among others.

SOCIOCULTURAL FACTORS RELATED TO SUBSTANCE USE AMONG RURAL MEXICAN-AMERICANS

Community Norms

Given the broad diversity observed among rural communities, care must be taken in generalizing findings from one rural community to another. A unique community culture is created by the values, norms, customs, and traditions that develop historically within a particular community. Moreover, rural communities differ from one another in ways that urban or suburban communities do not (Edwards 1992). In the low population density southwestern States where most of the rural Mexican-American population resides, communities are often isolated, with the closest town being another isolated community. Isolation intensifies the influence of local community norms on behavior. Local cultural values regarding substance use may well be important sources of influence that discourage the initiation of drug use (Oetting and Beauvais 1990). Indeed, individual and group substance use patterns are influenced by subcultures within a community, and by the social structures found in the surrounding region (May 1992).

For example, in one south Texas community, Wilkinson (1989) identified six lifestyle subcultures that were based on economic, occupational, linguistic, and educational attributes. Variation in drinking patterns was evident among these six subcultural groups: (1) migrants, (2) farmworkers, (3) working class, (4) farmer/rancher, (5) middle class, and (6) upper class. The farmworkers were more isolated than other groups, and drank either alone or at the home of a friend or relative, whereas the middle-class and migrant groups reported drinking in a variety of locations, including nightclubs and cocktail lounges. Wilkinson concluded that lifestyle subgroups are more useful in predicting substance use patterns than the more global variables of socioeconomic status or occupational prestige. Wilkinson's lifestyle subcultures could be regarded as large peer clusters that emerge naturally within a given community.

Other researchers have observed similar substance use patterns based on regional and lifestyle factors. For example, of three migrant streams that originated in Texas, the Midwestern migrants exhibited the greatest constraints on drinking due to the presence of families and the conservative attitudes of employers. By contrast, the Western and Eastern migrants, who were often single males, drank heavily for recreation because of the isolation of work camps and the lack of transportation to get to other forms of recreation (Trotter 1985).

In another study, drinking patterns and contexts in three California areas were observed. Male migrant farmworkers drank beer continuously on the job and in bars after work, whereas American-born laborers and industrial workers drank after work in neighborhood bars. By contrast, male and female immigrants drank moderately in restaurants that featured traditional music and dancing, whereas higher socioeconomic status Hispanics, who likely were more acculturated, patronized ethnically mixed bars and clubs where their drinking behavior was indistinguishable from that of non-Hispanics (Technical Systems Institute 1977).

Gender

One of the most consistent findings in the literature on substance use among Mexican-Americans is that females, compared to males, use alcohol in lower quantities and frequencies. This is true for women in rural and urban communities, for women in Mexico, for recent immigrants, and for second- and later-generation populations (Markides et al. 1990). These distinctions have been attributed to the differential cultural expectations regarding substance use for women as compared with men. However, these traditional expectations and norms may be changing. Younger Mexican-American women (ages 20 to 39), relative to Mexican-American women ages 40 and over, have been observed to be more likely to consume alcohol (less likely to be an abstainer), to consume alcohol more frequently (days per month), and to consume greater quantities of alcohol (total drinks per month) (Markides et al. 1990). Nonetheless, even among this younger cohort, alcohol consumption remains lower for women than for their male peers.

Gender and ethnic variations in patterns of use have also been reflected in rates of lifetime "Diagnostic and Statistical Manual of Mental Disorders," 4th ed. (DSM-IV) (American Psychiatric Association 1994) disorders for alcohol abuse/dependency and for drug abuse/dependency among urban Mexican-Americans as observed in the Los Angeles Epidemiologic Catchment Area (LA-ECA) study (Karno et al. 1987). For alcohol abuse/dependency, a more pronounced male-female discrepancy was observed among the Mexican-Americans compared with their non-Hispanic white peers. For young Mexican-Americans (ages 18 to 39), lifetime alcohol abuse/dependency rates were 33.0 percent for males and only 5.2 percent for females, whereas for non-Hispanic whites, these rates were 21.6 percent for males and 10.7 percent for females. This gender-by-ethnicity interaction, showing a greater differential in rates of alcohol abuse/dependency by gender among Mexican-Americans, supports the notion that culturally prescribed gender norms for the use of alcohol have been operating among Mexican-Americans.

In contrast, in the LA-ECA study, differential gender norms were not observed in lifetime prevalence of drug abuse/dependency. Instead, this study revealed a main effect for ethnicity. Lifetime rates of drug abuse/dependency for urban Mexican-American males were 9.0 percent and 3.7 percent for females, whereas rates for urban non-Hispanic white males were 24.7 percent and for females, 18.7 percent. The sociocultural factors that govern these lower rates of drug abuse among urban Mexican-Americans relative to their urban Anglo peers are not clear. Nor is it clear whether a similar pattern in DSM-IV diagnostic prevalence rates would be expected for drug abuse/dependence among rural Mexican-Americans and their Anglo-American peers.

In contrast with the LA-ECA study, smaller indepth studies examining illegal drug use have found that some groups of Mexican-American women have used illicit drugs at equal or higher rates than Mexican-American men or Anglo women and men. These studies have also reported that compared to Mexican-American men and Anglo women, Mexican-American women in substance abuse treatment programs had more extensive criminal involvement, were less likely to be employed, and had the least positive treatment outcomes. Further, the Mexican-American women were more likely to have been involved in criminal activities before initiating drug use, and were more likely than Anglo women to have been initiated into heroin use by an addicted spouse or partner (Anglin et al. 1987*a*, 1987*b*; Gutierres and Russo 1993; Hser et al. 1987; Moore and Mata 1981).

In summary, results from these studies suggest that when acting within traditional cultural norms, the behavior of Mexican-American women is influenced by expectations that encourage abstention and limited substance use. However, when Mexican-American women deviate from these traditional norms, negative judgments and sanctions from traditional community residents may leave them with little social support and few opportunities for recovery. For Mexican-American women raised in traditional families, a violation of the norm of abstinence from alcohol and/or drug use may prompt what has been called a Mexican culture abstinence violation effect (Marlatt and Gordon 1985). Here, significant usage beyond the limits of abstention could induce guilt-ridden self-statements that a woman may as well keep using, since the sacred vow of abstinence has now been violated. Thus, traditional and male-oriented Mexican norms and their prescribed punitive consequences against women might promote intense alcohol and/or drug involvement among some Mexican-American women, particularly among women who live in rural communities where cultural norms and traditionalism are particularly strong.

Traditionalism

Among Mexican-Americans and other Hispanics, the general concept of traditionalism refers to a set of beliefs, attitudes, and values that reflect conservative and often agrarian life views. Within the Hispanic/Spanish-speaking cultures, including the cultures of Mexico, the Caribbean, Central America, and South America, Catholicism has been a core aspect of culture. Strong religiosity and devotion (particularly among women), belief in family loyalty, loyalty to church and the community, and clear gender role expectations are important aspects of Catholic teachings that have permeated the Hispanic cultures. In addition, ethnicity, as reflected in awareness of one's group as being different from the U.S. middle-class mainstream, is a secular aspect of the experience of being Hispanic. Ethnicity is characterized in part by a group's sense of common history or origin, shared symbols (including religious symbols), and shared standards of behavior (including distinctive values, beliefs, and behavioral norms), all of which are encoded within the language (Harwood 1981). This sharing of common history, beliefs, and norms gives ethnic persons a sense of kinship, affiliation, belonging, and identity that binds members of the group, particularly when facing discrimination from other social groups.

The more specific concept of family traditionalism also has strong rural features, emphasizes family loyalty, and appears to be a core factor within Mexican/Chicano ethnicity. Ramirez has described a general traditionalism-modernism dimension that captures variations in lifestyles including those of Mexicanos, Mexican-Americans, and Chicanos (Ramirez 1991). The traditional end of this continuum is characterized by traits from nine domains: (1) distinct gender role definitions, (2) strong family orientation and loyalty, (3) value of family over individualism, (4) strong sense of community, (5) strong past and present time orientation relative to a future time orientation, (6) reverence for elders, (7) value of traditions and ceremonies, (8) subservience and deference to authority, and (9) spirituality and religiousness. Ramirez asserts that rural environments are most commonly associated with traditional cultural orientations, whereas urban life is associated with modernistic (nontraditional) orientations, although some urban residents can maintain traditional views while rural residents can have modernistic cultural views. According to Ramirez, traditional communities are typically rural and poor. Within them, traditionalism emphasizes strictness in childrearing; separation of gender roles; group cooperation instead of individual competition; lifelong identification with family, community, and culture; and spiritualism as the means of explaining the mysteries of life. By contrast, the modernism prevalent in urban and suburban communities has a more liberal religious orientation emphasizing egalitarianism in childrearing, flexibility in gender role definitions, individualism and competition rather than group cooperation, separation and independence of youth from family early in life, and science as the means of explaining the mysteries of life (Ramirez 1991).

In traditional and low-income communities, the gender differential with respect to abstention from alcohol use is especially high (Cahalan et al. 1969). There is some evidence that factors associated with traditionalism (religiosity) in rural areas may account for high rates of abstention from alcohol use, particularly among women. For example, in a working-class Los Angeles community, Estrada and colleagues (1982) found that for young females, religiosity was the best predictor of low alcohol use, whereas for males, parental and sibling use were the best predictors of high alcohol use. These interpersonal influences may be particularly important in rural areas where traditionalism and religion play prominent roles in socialization.

Similarly, Trotter (1982) examined traditionalism as one explanation for distinctive drinking patterns among Mexican-American and Anglo college students from the Lower Rio Grande Valley in Texas, a poor, rural area. Trotter found that the Mexican-American and Anglo college students drank less than college students from other communities, and suggested that the rural and economically depressed character of the locale explained the conservative drinking patterns for both Mexican-American and Anglo youth.

Acculturation

Acculturation is a process that is particularly important among people who have an immigrant history, or who have been affected by economic, social, or political changes that force migration and/or adaptation to new cultural conditions. For persons of Mexican heritage, whether they are immigrants (Mexican nationals) or natives of the Southwest (Mexican-Americans/Chicanos), acculturation and acculturation conflicts have been salient and recurring aspects of life and living. Acculturation refers to changes in values, attitudes, behaviors, language, and lifestyle induced by the need to adapt to a new cultural environment. The process is often accompanied by conflict and stress as the person struggles with issues of upward or downward social mobility, identity formation and change, and value conflicts. For some Hispanics, discrimination and barriers to upward mobility constitute chronic life strains that can prompt life dissatisfaction and distress, and, perhaps, drug use (Burnam et al. 1987).

Berry (1980) postulated four varieties of acculturation that reflect differing strategic resolutions to the conflicts that surround the process of cultural adaptation: (1) assimilation—relinquishing or rejecting one's native cultural identity following a complete transition into the mainstream society; (2) integration—retaining one's cultural identity while adopting the cultural ways of the mainstream society; (3) rejection—a self-imposed withdrawal from and rejection of the mainstream society coupled with a strong assertion of one's native ethnic/racial identity as separate from mainstream society; and (4) deculturation—a cultural marginality that involves a loss of one's native cultural identity and a failure to assimilate into the mainstream culture.

For Mexican-American youth, acculturation issues are often important aspects of adolescent development. Acculturation conflicts revolve around ways to become successful in mainstream culture; establishing and maintaining personal and cultural identity, which often involves conflicts over loyalty to one's native cultural heritage; and choice of peer groups, that is, those one chooses as friends (such as only Mexican-Americans, only Anglo Americans, or both). For many Mexican-American/Chicano youth, the norms of the group with which the youth identifies set the stage for future patterns of behavior, including drug and alcohol use (Oetting and Beauvais 1987).

Acculturation and Health. Acculturation has been regarded as an important moderating and mediating variable that is associated with health outcomes among Mexican-Americans and other Hispanics. For example, one study argues that Mexican culture increases depression because it promotes an external locus of control orientation (fatalism). On the other hand, these fatalistic external attributions may protect self-esteem and reduce anxiety by releasing the person from social demands for achievement and success (Mirowski and Ross 1984). In addition, responsibility to the group rather than to oneself may promote depression but relieve anxiety because of the reciprocal social support provided by the family or social group. Even though this study suggests provocative associations between Mexican culture and psychological well-being, it raises questions about the social dynamics that influence the well-being of Mexican-Americans and how these factors might promote drug use and abuse.

In the urban Los Angeles setting, the lifetime prevalence of DSM-IV alcohol abuse/dependence and drug abuse/dependence among Mexican-Americans was found to increase with level of acculturation, even after controlling for the effects of sex, age, and marital status (Burnam et al. 1987). Lifetime prevalence rates per 100 persons for alcohol abuse/dependence for three levels of acculturation (low, medium, and high) were 11.9 percent, 20.6 percent, and 24.2 percent, respectively, and lifetime prevalence rates for drug abuse/dependence were 0.4 percent, 4.3 percent, and 8.3 percent. Moreover, lifetime rates for antisocial personality disorder by level of acculturation were 2.1 percent, 3.3 percent, and 6.1 percent. Although this study is cross-sectional in nature, the results suggest that for adult urban Mexican-Americans the risks of antisocial conduct that include problem use of alcohol and drugs increases with level of acculturation. Similar patterns might be expected for rural Mexican-Americans.

The effects of acculturation on patterns of alcohol consumption among Mexican-Americans also appear to differ by gender (Gilbert and Cervantes 1986). Gilbert (1987) noted that the drinking behavior of Mexican-American women has shown increasing similarity to the drinking patterns of women in the general U.S. population. This suggests that the drinking behavior of Mexican-American women is modified by culture contact and greater integration into the social structure that shapes the drinking behavior of most U.S. women. Several empirical studies have also found support for this notion. Roizen (1983) reported that successive generations of Mexican-American women have moved out of the lowest categories of drinking frequency and have moved into the middle categories (occasional and infrequent drinking). However, even by the third generation, these women were not comparable to the general U.S. population of women. Other studies have shown a generational decline in rates of abstention (Caetano 1986; Gilbert 1985*a*, 1987) in connection with growing liberal attitudes toward alcohol consumption among young and middle-class Mexican-American females (Gilbert 1984, 1985*a*, 1985*b*; Trotter 1985).

A study of Mexican-American and Anglo women in U.S.-Mexico border towns found a linear relationship between education and level of alcohol consumption for Mexican-American women (Holck et al. 1984). Further, when education was held constant, the differences in consumption patterns between Mexican-American and Anglo women all but disappeared. Caetano and Medina-Mora (1986) found an interaction between acculturation levels and educational levels, such that at each educational level, the more acculturated Mexican-American women were the more likely to drink and to drink in greater quantities and frequency. Moreover, level of acculturation was found to be positively related to levels of alcohol consumption among younger (ages 20 to 39) Mexican-American women, but not among older women, and not among adult Mexican-American men of all ages (Markides et al. 1990). Thus, it appears that many of the role-related and socioeconomic factors connected with increasing alcohol consumption among the general population of U.S. women may also apply to Mexican-American women, particularly as they acculturate to the norms of the U.S. core cultures.

Some data suggest, however, that factors other than acculturation may also be important in understanding Mexican-American female substance use. Gilbert (1987) noted an especially high rate of abstention in a sample of immigrant Mexican women, higher even than for women still residing in Mexico. Gilbert speculated that women who had newly immigrated to the United States were isolated from family and friends and from the familial and festive social settings where alcohol consumption was sanctioned. In addition, Holck and colleagues (1984) found that Mexicanas (those women most closely identified with Mexico) were significantly more likely to be abstainers than Chicanas (U.S.-born, bicultural, and more acculturated Mexican-American women), and these differences remained even when level of education was controlled.

A TRADITIONAL VALUE ORIENTATION: MIGHT IT BE PROTECTIVE?

As noted previously, Mexican family traditionalism has its roots in rural/agrarian family life where family survival required strong loyalty and responsibility to the family, and where distinct gender roles dictated the farming and domestic responsibilities of males and females, respectively. Furthermore, Catholicism prescribed an abiding faith in God and the church, and, through the church, a sense of community where families were responsible for helping one another. Church and family rituals, including baptisms, quinceñeras (15th birthday celebrations of a young woman's growth toward adulthood), birthday, and fiesta celebrations (e.g., las posadas, or Christmas celebrations of Joseph and Mary's finding shelter in a manger, where they were visited by the three wise men) served to affirm family cohesion, kinship ties, and community unity (Falicov 1982). This family and community bonding (Oetting 1992) fostered a series of close and supportive relationships with parents, nuclear and extended family members, and other members of the community. Each of these relationships may have discouraged drug use. Evidence in support of the protective influence of familial ties that communicate sanctions against drug use has been observed (Oetting and Beauvais 1987; Vega et al. 1993*b*). Family bonds may discourage adolescent drug use if these bonds promote respect and obedience for the wishes and advice of elders and/or emphasize the youth's responsibility to the family or the community.

Hypotheses and Framework for Studying Drug Use Among Rural Mexican-Americans

Hypothesis on Acculturative Stress From Rural-Urban Migration. Drug use has been conceptualized as a maladaptive coping response to stressful conditions such as acculturation (Schinke et al. 1988; Shiffman and Wills 1985). Moreover, differential rates of acculturation between Hispanic youth and their parents promote intergenerational conflicts that evolve from accelerated acculturation and the development of antitraditional attitudes among Hispanic adolescents and the reactive efforts of the Hispanic parents who seek to enforce traditional values, efforts that in turn escalate into family conflict (Szapocznik and Kurtines 1989; Vega et al. 1993*a*). To address these family system issues, brief strategic family therapy (BSTF) has been developed. This therapeutic approach emphasizes family systems restructuring and sensitivity to Hispanic cultural issues. Whereas some agree that acculturation conflict occurs within Hispanic families, others argue that this view lacks specificity because many Hispanic families undergo acculturation stress but not all adolescents within these families turn to drug abuse or other problem behaviors to cope with this stress.

Hypothesis on Rebellion Against Traditions. The hypothesis on rebellion against traditions proposes that independent from acculturative stress, youths who disagree with or reject traditional norms may disengage from the family unit and affiliate with deviant peers, increasing their likelihood of cigarette, alcohol, and illicit drug use. Particularly within the most conservative of Mexican families, where adolescent and primarily young females may complain about being stifled by strict family rules, rebellious acting-out behavior could take a variety of forms, including the purposive use of alcohol and illicit drugs (Castro et al. 1987).

A Schema Involving Acculturation and Family Traditionalism. Figure 1 presents a two-factor schema that depicts relationships between acculturation (low, high) and family traditionalism (low, high). The first factor, acculturation, is measured by the General Acculturation Index (GAI) where low acculturation is characterized by: (1) being Spanish-language dominant in speech and reading, (2) being raised in Latin America, (3) maintaining Hispanic/Latino friends almost exclusively, and (4) having pride in being a Latino/Hispanic (see appendix A). The 5-item GAI was adopted from the Acculturation Rating Scale for Mexican-Americans (ARSMA) (Cuellar et al. 1980), and for a community sample of 671 Hispanic women exhibits good internal consistency, with a

Cronbach's coefficient of $\alpha = 0.78$ (Balcazar 1995). GAI values of 1.00 to 2.39 identify less acculturated individuals, whereas higher values identify more acculturated individuals: bilingual/bicultural individuals (2.40 to 3.69) and highly acculturated individuals (3.70 to 5.00).

The second factor, family traditionalism, is presented as an orthogonal dimension to acculturation. High Mexican family traditionalism is characterized by themes of: (1) closeness, loyalty, and a sense of responsibility towards the family; (2) respect and reverence towards elders; and (3) reverence for traditions as sources of life meaning and sense of community (see appendix B).

Items describing Mexican family traditional and rural values have also been examined in a community sample of 442 Hispanic women. These items form two scales: a family traditionalism scale (7 items, $\alpha = 0.67$), and a rural preferences scale (6 items, $\alpha = 0.69$). Family traditionalism scale values of 1.00 to 4.49 identify less traditional individuals, whereas values of 4.50 to 5.00 identify more traditional individuals. For the rural preferences scale, values of 1.00 to 3.49 identify individuals with a lower preference for the rural lifestyle, whereas values of 3.50 to 5.00 identify individuals with a higher preference for the rural lifestyle.

For this sample, family traditionalism was uncorrelated with level of acculturation ($r = -0.02$), indicating that conservative, traditional Mexican family values can be observed across all levels of acculturation. By contrast, rural preferences were inversely related to level of acculturation ($r = -0.33$, $p < 0.001$) indicating that stronger rural preferences are observed among the less acculturated women ($r = -0.33$). Stronger rural preferences were positively associated with stronger family traditionalism ($r = +0.34$, $p < 0.001$), indicating that stronger family traditionalism occurs among individuals who prefer the rural lifestyle. As depicted by the two-factor schema, these combinations present interesting possibilities for future studies of the relationship between family traditionalism and acculturation (and rural preferences and acculturation) as these may relate to levels of drug and alcohol use and abuse among Mexican-Americans and other Hispanics.

Characteristics of the four acculturation-family traditionalism subgroups enumerated by this schema can be discussed in relation to drug use.[3] First, group I, the low acculturation, low family traditionalism group, is expected to exhibit a relatively moderate risk for drug use under the assumption that the less acculturated are at lower risk than the more acculturated, whereas any protective effects of family traditionalism

	High	II Lowest risk	III Low-to-moderate risk
Family traditionalism	Low	I Moderate risk	IV Highest risk
		Low	High
		Acculturation	

FIGURE 1. *Schema of acculturation-family traditionalism subgroups.*

would not be expected to operate in this low family traditionalism group. By contrast, group II, the less acculturated, high family traditionalism group, is postulated to benefit from the protective effects of both factors and thus to be at lowest risk.

Group III, the high acculturation, high family traditionalism group, is expected to be at low-to-moderate risk. Although strong traditional family values could promote drug avoidance, this effect would be countered by the greater (high acculturation) exposure to mainstream Anglo-American values and factors associated with higher rates of drug use. Finally, the high acculturation, low family traditionalism group, group IV, is expected to be at a relatively highest risk through exposure to mainstream culture and low acceptance of traditional family values.

Although these two factors, acculturation and family traditionalism and their interactions, are not the sole determinants of illicit drug use, their relative contribution to the problem could be assessed through holding other factors constant while testing these postulated relationships. Similar analyses can also be conducted for relationships postulated between the factors of acculturation and rural preferences.

SOME CONCLUSIONS

In sum, very little research has examined drug and alcohol use among rural Mexican-Americans. Those studies that have looked at alcohol use in rural Mexico have found that men were most likely to be heavy consumers of alcohol, whereas women were most likely to abstain from alcohol use. As rural Mexican men move into Mexican cities, alcohol use appears to decline, a pattern opposite from that of the United States, where studies show less alcohol consumption in rural and farm areas than in urban settings.

Studies examining drug and alcohol use among rural Mexican-American youth have yielded mixed results. Some authors have suggested that substance use by Mexican-American youth is similar to that of Anglo youth, but at least one study has shown that Mexican-American females use drugs at a higher rate than do Anglo females. Because rural Mexican-Americans are more likely than urban residents to hold traditional beliefs and values about the family, including distinct gender role definitions, a reaction against traditionalism may prompt an orientation towards acting-out behaviors, including the use of illicit drugs. One explanation for this finding is that drug use for some young Mexican-American women may be a form of rebellion against oppressive traditional cultural expectations for female behavior.

Family traditionalism and acculturation and the interactions of the two factors may be important in understanding drug use among rural Mexican-Americans. In the past, traditional family values were associated with lower substance use, whereas problematic drug and alcohol use was associated with higher levels of acculturation. Data have shown that these measures of family traditionalism and acculturation are orthogonal (independent and uncorrelated), suggesting the utility of a two-factor schema for examining risks for substance abuse (see figure 1). Ironically, whereas rural Mexican-American adults are generally less acculturated and more traditional, putting them at low risk for substance abuse, their children may be at high risk as the result of the combined effects of rebellion against traditional behavioral expectations, rapid acculturation, and the experience of generational and cultural conflicts. The existing literature suggests differing levels of risk and cultural orientations that may prompt the need for differing types of preventive intervention approaches to address problems of substance use among various groups of rural Mexican-Americans.

PREVENTION INTERVENTION APPROACHES

Community Programs

For population changes to occur in substance use, it appears that concurrent structural change must occur within several domains: familial, religious, social, economic, judicial, educational, and health care. The occurrence of healthy change and its maintenance will depend on promoting changes in values and on related shifts in the behavior of primary social groups. For adolescents, the strategy of building supportive local community environments has been partially effective in reducing academic failure (Felner et al. 1982), reducing teen pregnancy (Vincent et al. 1987), preventing involvement in the juvenile justice system (Davidson et al. 1987), and preventing drug use (Pentz et al. 1989).

In rural areas, the community-based approach may best focus on the educational system. Small rural schools are often the activity centers for communities, and given their small enrollments they are better able to monitor student behaviors when compared with large urban or suburban schools. However, resistance to developing formal prevention has been common in rural schools (Dresser et al. 1990), although interest has existed in developing informal problem-management systems. Moreover, within rural schools, program development can be inhibited by community politics, the absence of parent organizations, and limited access to professional resources and treatment centers.

Self-Concept—Ethnic Identity

Although machismo is often cited as an explanation for maladaptive male drinking practices, Lex (1987) has pointed out that the original positive concept of machismo has been distorted in a negative fashion to now represent masculine entitlement, sexual exploitation, and toughness, including the right to drink, especially as a reward for earning a living. It is important to remind the new generation of Mexican-American youth that the original Mexican concept of machismo was associated with the more positive male traits of personal autonomy, dignity, strength, honor, respect, and responsibility as a family provider. Even though refusal to drink may prompt criticism from some males, undignified drunkenness universally prompts criticism from Mexican-Americans, both male and female. Being a borracho (a drunkard) or a droga adicto (a drug addict) is strongly condemned in almost all sectors of the Mexican-American community (Falicov 1982). Culturally relevant preventive interventions for Mexican-American/Chicano youth that focus on self-concept/self-esteem and values clarification should include issues of ethnic identity, the positive aspects of machismo and marianismo, and the incompatibility of illicit drug use with mature and culturally responsible and respectable male and female gender roles (Castro et al. 1991).

Moreover, multicultural identification, as described by orthogonal cultural identification theory (Oetting and Beauvais 1991), suggests that youth can successfully identify with two, three, or more different cultures without compromising their native-culture identity. Strong cultural identification is postulated to serve as a source of inner strength and stability and has been associated with strong self-esteem and school adjustment. Although ethnic identification may exert some protective effects against drug use, it is not uniquely protective, and its protective effects are influenced by other contextual factors that include parental attitudes towards drug use, drug use among the youth's peer reference group, and environmental factors (Oetting and Beauvais 1991).

For Mexican-American rural youth, value orientations that may compete with drug abuse must emphasize cultural messages that promote (1) pride in self as a Chicano/Mexican-American, (2) responsibility to family as the true indicator of being a genuine hombre or mujer (real man or woman), and (3) a responsibility to contribute to one's community and to one's people. This cultural sense of mission that promotes traditional core culture values might prompt drug avoidance among Mexican-American/Chicano youths (Castro et al. 1994). Community research with at-risk Mexican-American youths, both rural and urban, could serve to verify the validity of these notions as they apply to culturally effective preventive interventions for Mexican-American youths.

Skill Building

From a stress-coping perspective, skill building enables youth to engage the environment more effectively through developing skills to deal with stressful situations (Emshoff and Moeti 1987; Pedro-Caroll and Cowen 1987), skills for making better decisions, and social skills to refuse pressure to use drugs (Botvin et al. 1984; Flay et al. 1985).

The life skills training (LST) approach (Botvin and Dusenbury 1987) has emphasized increasing generalized social competencies as well as increasing competencies specific to drug avoidance. LST includes skills development in the areas of assertiveness, decisionmaking, skills efficacy, relaxation, communications, and interpersonal relations. It also includes drug education to increase knowledge about cigarette smoking, alcohol, and marijuana use; changing attitudes; and changing normative expectations regarding the use of these substances (Botvin et al. 1990). Effective skills training that is culturally relevant for rural Mexican-Americans will need to consider: (1) their cultural value orientations and needs as related to appropriate assertiveness, particularly in the face of traditional gender role expectations; (2) modes of decisionmaking that consider the wishes of elders and family; and (3) communication and interpersonal skills that emphasize family dynamics instead of solely the wishes of the individual.

Further research is needed to evaluate the manner in which skills-training interventions should be modified to make them culturally relevant and appropriate for various subpopulations of Mexican-Americans.

FUTURE RESEARCH

The scarcity of research on rural Mexican-Americans and other rural Hispanics, and the conclusions drawn from the literature regarding community norms, gender roles and expectations, traditionalism, and acculturation, suggests several studies.

A need exists for longitudinal studies to determine the social and psychological risk factors that prompt drug experimentation and progression to drug abuse among rural Mexican-Americans and other rural Hispanic males and females. Based on the limited information obtained from earlier studies with rural populations, it appears that solely examining the ecological aspects of rural life, such as low population size or isolation, may not clarify how the composite of rural conditions might safeguard against drug and alcohol use. Studies that use the broader concept of rurality might be more useful, where examination of interpersonal and intrapersonal characteristics of the rural lifestyle may yield more potent factors that are associated with patterns of drug and alcohol use. Moreover, these studies should examine subgroups of Mexican-Americans as depicted in the acculturation-family traditionalism schema, and the differential effects of these factors for male and female adolescents and young adults. Here also, the concept of family traditionalism should be distinguished from the concept of rural preference or orientation. Clear measures of these related but conceptually distinct constructs should be further developed and used in studies that examine their hypothesized relations to patterns of drug and alcohol use.

There is also a need for studies that examine both protective and risk-inducing effects of various aspects of family traditionalism. For example, strong family orientation and loyalty and a strong mission to contribute to the community may promote drug avoidance. On the other hand, imposed subservience and deference to authority, particularly when introduced by elders in a punitive or forceful fashion, may incite rebelliousness and reactive drug use among some Mexican-American adolescents, particularly among females, whereas identification with the original positive concepts of machismo and marianismo may serve to discourage drug use. In addition, the possible role of a cooperative family orientation (relative to a competitive, individualistic orientation) in reducing the risks of drug use and abuse raises interesting questions and promotes speculative answers about the adaptive value of both orientations. These provocative notions need empirical testing. In short, not all aspects of family traditionalism are likely to be adaptive for effective coping in either modern urban or rural environments. Isolating the adaptive aspects of traditionalism, those that do promote drug avoidance, is another potential area of interesting research with rural Mexican-Americans.

Finally, dual qualitative-quantitative studies of prevention interventions are needed (Castro et al. 1994). Quantitative approaches offer accuracy in the measurement of important constructs and facilitate deductive hypothesis testing. In contrast, qualitative approaches provide depth and richness to the understanding of important constructs, and through integrative inductive analyses help generate new hypotheses. Cultural studies designed to capture the strengths of both approaches are needed. These studies should examine the effects of culturally oriented intervention components such as self-concept/self-esteem, values clarification, and culturally appropriate skills training that may induce adaptive changes in cognitions (attitudes, normative expectations, behavioral intentions) and in drug use and drug avoidance. Ethnographic approaches including focus groups should be used to examine the process by which various prevention/intervention components influence putative mediators of drug-using and drug-avoidant behaviors. These mediators include family traditionalism, self-concept, self-efficacy, ethnic pride, family loyalty, family bonding, and bonding with peers. Ethnographic approaches should also be used to examine contextual factors such as economic deprivation, family conflict, conflicting messages from peers and family, and related aspects of acculturation and urbanization as these may operate as barriers to drug avoidance.

Much interesting and needed research can be conducted with rural Mexican-Americans and other Hispanic populations, particularly in relation to the proposed schema, the constructs, the issues, and the questions posed in this chapter.

NOTES

1. The term "Mexican-American" is used primarily; the authors also recognize and use the terms "Chicano" for males and "Chicana" for females interchangeably with Mexican-American.

2. The terms "Hispanics" and "Latinos" for males and "Latinas" for females are used interchangeably. Hispanic and Latino are the generic terms for Latin-American residents of the United States, both native and foreign born. Hispanics/Latinos include native subgroups such as Mexican-Americans, Puerto Ricans, and Cuban Americans, as well as immigrants from Mexico and from other Latin American countries, both documented and undocumented.

3. The authors recognize that most acculturation analyses identify three levels or groups: (1) low acculturated, (2) bilingual/bicultural, and (3) high acculturated. However, for maximum simplicity in conceptualization, data analysis, and program development, a 2 x 2 schema is presented that consists of two levels (low and high) for each of two factors: acculturation and family traditionalism.

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ACKNOWLEDGMENT

This research was supported by National Institute on Drug Abuse grant DA-05661 and by National Cancer Institute grant CA-57140. The clerical assistance of Kendra Szabo-Pachter is warmly appreciated.

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Appendix A
General Acculturation Index
Indice General De Aculturacion

Please circle the choice that is true for you. Then add the circled scores to obtain the SUM below. Then divide the SUM by 5, to obtain the General Acculturation Index (AI) value.

1. **I speak:**
   1) Only Spanish
   2) Spanish better than English
   3) Both English and Spanish equally well
   4) English better than Spanish
   5) Only English
2. **I read:**
   1) Only Spanish
   2) Spanish better than English
   3) Both English and Spanish equally well
   4) English better than Spanish
   5) Only English
3. **My early life from childhood to 21 years of age was spent:**
   1) Only in Latin America (Mexico, Central America, South America) or the Caribbean (Cuba, Puerto Rico, etc.)
   2) Mostly in Latin America or the Caribbean
   3) Equally in Latin America/the Caribbean and in the United States
   4) Mainly in the United States and some time in Latin America/the Caribbean
   5) Only in the United States
4. **Currently my circle of friends are:**
   1) Almost exclusively Hispanics/Latinos (Chicanos/Mexican Americans, Puerto Ricans, Cubans, Colombians, Dominicans, etc.)
   2) Mainly Hispanics/Latinos
   3) Equally Hispanics/Latinos and Americans from the United States(Anglo Americans, African Americans, Asians/Pacific Islanders, etc.)
   4) Mainly Americans from the US
   5) Almost entirely Americans from the US
5. **In relation to having a Latino/Hispanic background, I feel:**
   1) Very proud
   2) Proud
   3) Somewhat proud
   4) Little pride
   5) No pride (Or circle 5 if you are not of Latino/Hispanic background)

Por favor, circule el número de la selección que sea más correcta para usted. Luego calcule la SUMA. Divida la SUMA entre cinco para obtener su Indice General de Aculturación.

1. **Yo hablo:**
   1) Solamente español (castellano)
   2) El español mejor que el inglés
   3) El inglés y el español por igual
   4) El inglés mejor que el español
   5) Solamente inglés
2. **Yo leo:**
   1) Solamente español (castellano)
   2) El español mejor que el inglés
   3) El inglés y el español por igual
   4) El inglés mejor que el español
   5) Solamente inglés
3. **Mi juventud desde la infancia hasta los 21 años de edad la vivi:**
   1) En Latinoamérica (México, Centroamerica, Sudamerica) o en el Caribe (Cuba, Puerto Rico, etc.)
   2) Principalmente Latinoamérica o el Caribe
   3) En Latinoamérica/el Caribe y en los Estados Unidos por igual
   4) Principalmente en los Estados Unidos y un tiempo en Latinoamérica/el Caribe
   5) Solamente en los Estados Unidos
4. **Actualmente mi círculo de amigos está formado de:**
   1) Casi exclusivamente hispanos/latinos (chicanos, mexicoamericanos, puertorriqueños, cubanos, colombianos, dominicanos, etc.)
   2) Principalmente hispanos/latinos
   3) Mexicanos/hispanos y angloamericanos (norteamericanos, africoamericanos (negros), asiaticoamericanos, etc.)
   4) Principalmente angloamericanos
   5) Casi exclusivamente angloamericanos
5. **En relación con mis raíces latinas/hispanas me siento:**
   1) Muy orgulloso(a)
   2) Orgulloso(a)
   3) Algo orgulloso(a)
   4) Un poco orgulloso(a)
   5) Nada orgulloso(a), o no tengo raíces latinas/hispanas

Appendix B
Scales of Family Traditionalism and Rural Preferences

Please answer how you feel about these questions regarding life values. There are no right or wrong answers. Please answer each question by indicating whether you: Disagree: A lot (1), or A little (2), No opinion (3), or Agree: A little (4), or A lot (5).

	Disagree		No opinion	Agree	
	A lot	A little		A little	A lot
1. You should know your family history so you can pass it along to your children.	1	2	3	4	5
2. The good life is lived by staying home and taking care of the family.	1	2	3	4	5
3. Children should be taught to be loyal to their family.	1	2	3	4	5
4. Small town communities offer a closeness to nature (the country) that is lost in the big city.	1	2	3	4	5
5. Women who have small children should not work outside the home.	1	2	3	4	5
6. The quality of life is better in a rural community, where a person can feel safe and close to nature (the country).	1	2	3	4	5
7. Traditional celebrations such as baptisms, weddings, or graduation ceremonies add meaning to life.	1	2	3	4	5
8. I prefer to live in a small town where everyone knows each other.	1	2	3	4	5
9. When making important decisions, I should always check with members of my family.	1	2	3	4	5
10. Adult children should visit their parents often.	1	2	3	4	5
11. The good life is lived by spending time with people and doing things at a leisurely pace.	1	2	3	4	5
12. In the country, people usually are more cooperative, friendly, and helpful.	1	2	3	4	5
13. We should observe our local celebrations and traditions since these traditions unite our community.	1	2	3	4	5

The Family Traditionalism Scale consists of items: 1,3,7,9,10,11, and 13.
The Rural Preferences Scale consists of items: 2,4,5,6,8, and 12.

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Appendix B (Concluded)
Escalas De Tradiciones Familiares Y Preferencias Rurales

Por favor exprese sus sentimientos sobre las siguientes declaraciones indicando si está: En desacuerdo: Bastante (1) or Poco (2), Sin opinion (3), o En acuerdo: Poco (4) o Bastante (5).

	En desacuerdo		Sin opinion	En acuerdo	
	Bastante	Poco		Poco	Bastante
1. Se debe conocer la historia de la familia para poderla pasar a sus hijos.	1	2	3	4	5
2. La buena vida se vive quedándose en casa y haciéndose cargo de la familia.	1	2	3	4	5
3. Se le debe enseñar a los niños a ser fieles a su familia.	1	2	3	4	5
4. Las comunidades en pueblos pequeños ofrecen una cercanía a la naturaleza (al campo, al pais) que no se encuentra en las grandes ciudades.	1	2	3	4	5
5. Las mujeres que tienen niños pequeños no deben trabajar fuera de su casa.	1	2	3	4	5
6. La calidad de la vida es mejor en una comunidad rural, donde una persona se puede sentir segura y cercana a la naturaleza (al campo o al pais).	1	2	3	4	5
7. Las celebraciones tradicionales tales como bautizos, matrimonios, o graduaciones le dan un mayor significado a la vida.	1	2	3	4	5
8. Prefiero vivir en un pueblo pequeño donde todos se conocen.	1	2	3	4	5
9. Al tomar decisiones importantes, siempre debo consultar con miembros de mi familia.	1	2	3	4	5
10. Los hijos adultos deben visitar a sus padres frecuentemente.	1	2	3	4	5
11. La buena vida se vive pasando el rato con la gente y haciendo cosas a paso lento.	1	2	3	4	5
12. En provincia, las gentes son usualmente más cooperativos, amistosos, y serviciales.	1	2	3	4	5
13. Debemos guardar nuestras tradiciones y celebraciones locales, puesto que éstas unen a nuestra comunidad.	1	2	3	4	5

La Escala de Tradiciones Familiares se identifica con las frases numero: 1,3,7,9,10,11, y 13.

La Escala de Preferencias Rurales se identifica con las frases numero: 2,4,5,6,8, y 12.

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☆U.S. GOVERNMENT PRINTING OFFICE: 1997-418-681/40007

NIH Publication No. 97-4177
Printed May 1997